ASSIGNMENT 04
WOKWI STIMULATOR

Date	24 October 2022
Student Name	Dhamodharan C
Student Roll Number	422519104012
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);
```

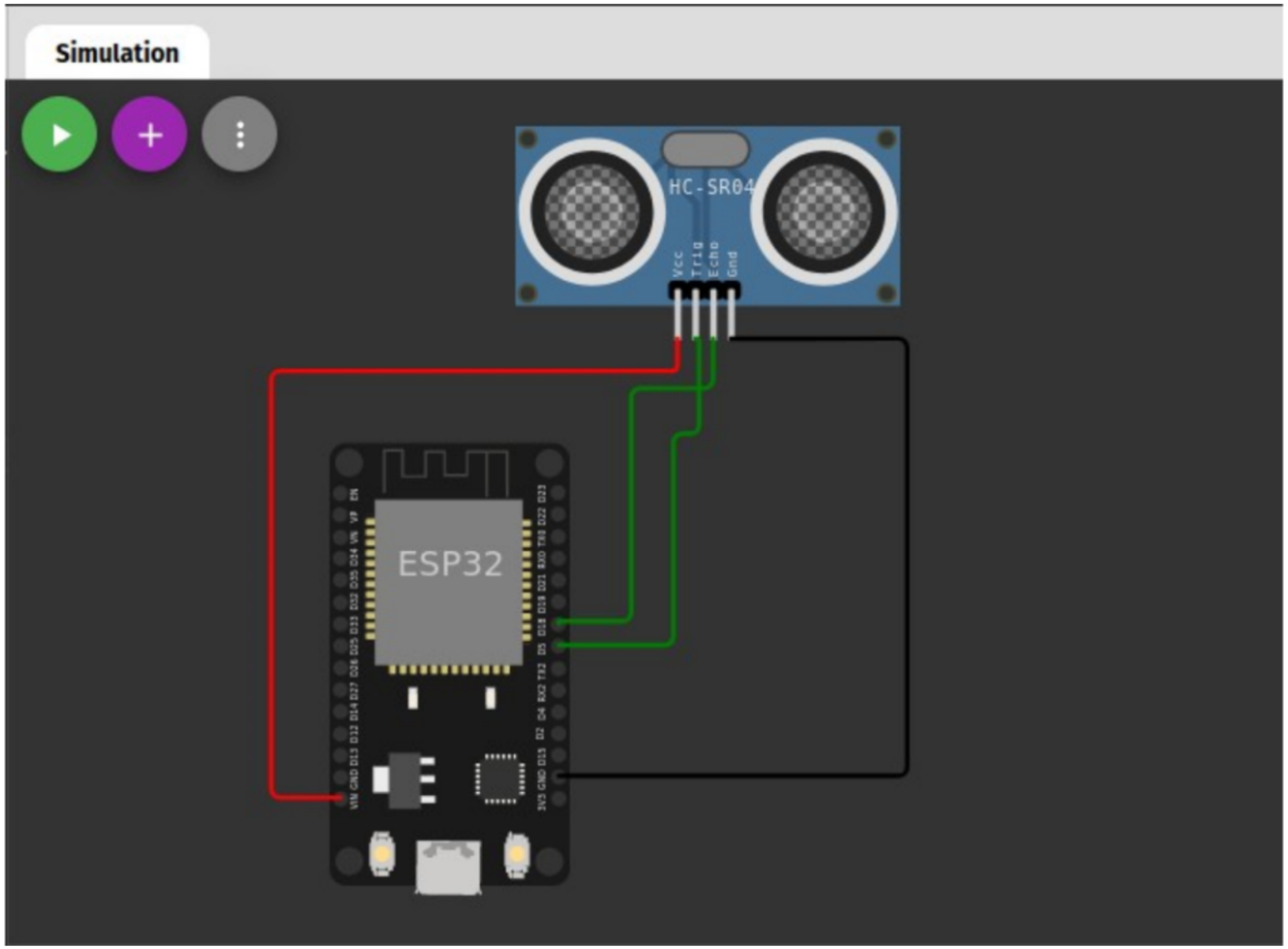
```
  if (!client.loop())
    {mqttConnect();
  }
}

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="tras
  h";
}
```

```
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 :

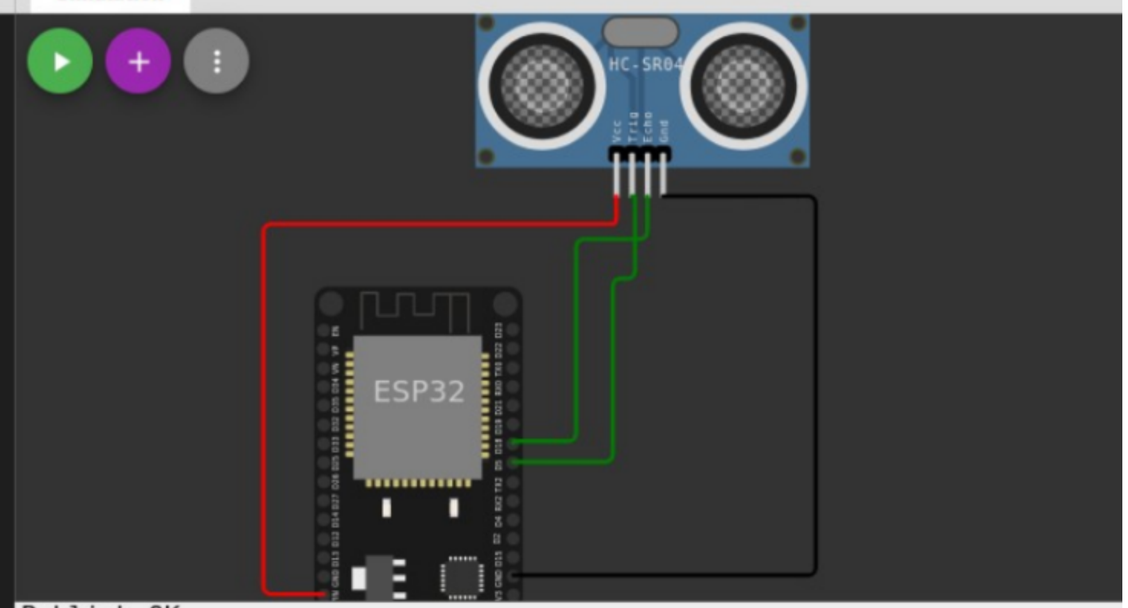
https://wokwi.com/projects/346647891630096979

WOKWI SAVE SHARE Docs

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

```ino
#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;
```

Simulation




```
Publish OK

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

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