

## ASSIGNMENT-IV

### 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.

### CODING:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "97mai0"
#define DEVICE_TYPE "Sivamadhavan23"
#define DEVICE_ID "Sivamadhavanece"
#define TOKEN "I)&NoyRn-DU00(*4yn"

#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/data/fmt/json";
char topic[] = "iot-2/cmd/command/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 += "\"}";

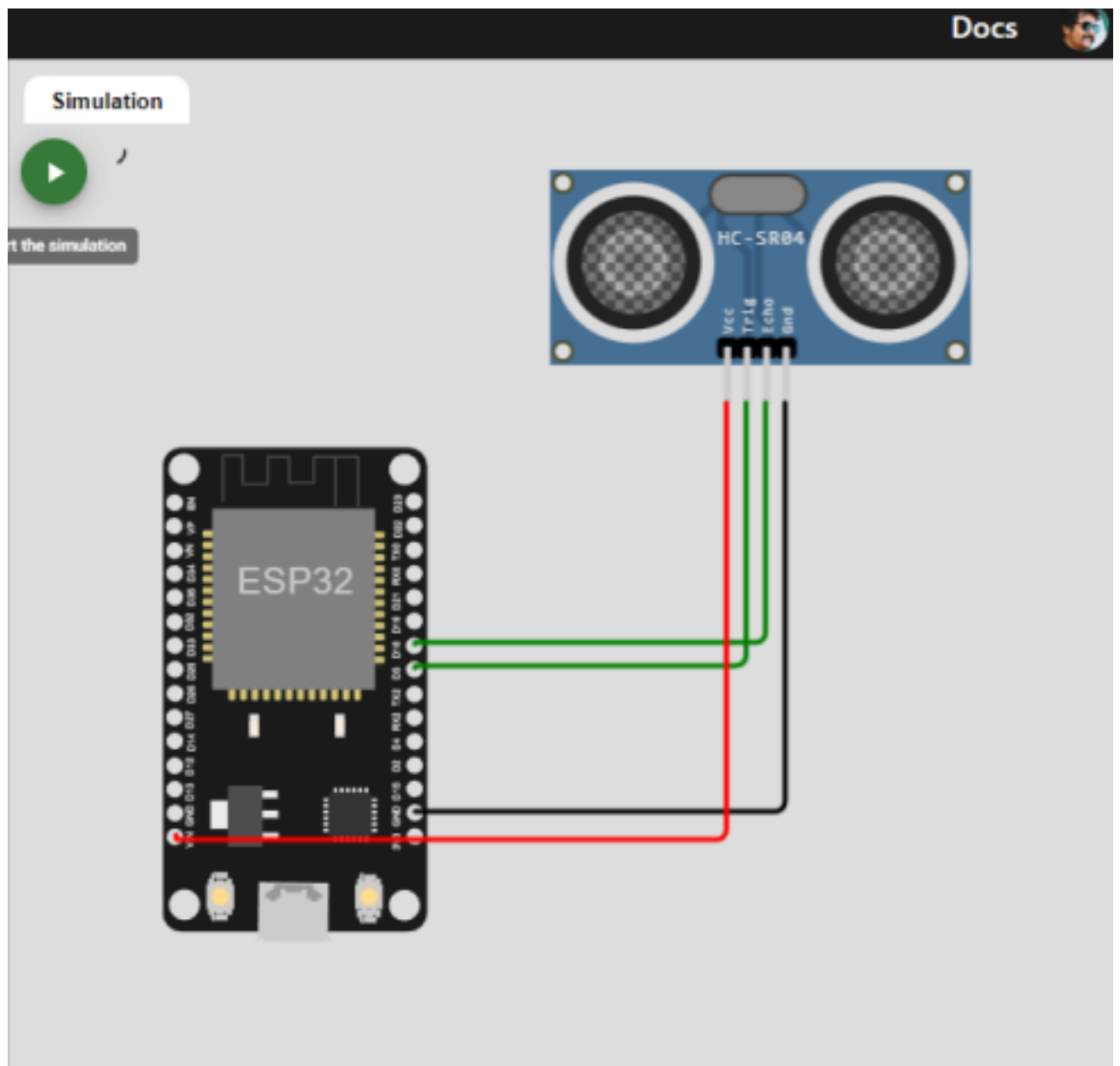
    Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload);
    if(client.publish(publishTopic, (char*) payload.c_str()))
    { Serial.println("Publish OK");
    }else {
        Serial.println("Publish FAILED");
    }
}

}

}

```

**CONNECTION:**



**OUTPUT:**

W sketch.ino - Wokwi Arduino and x IBM Watson IoT Platform x +

wokwi.com/projects/347469000177877587

WOKWI SAVE SHARE sketch.ino Docs

sketch.ino • diagram.json libraries.txt • Library Manager

```

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24 float dist;
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26 void setup()
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28   Serial.begin(115200);
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```

Simulation

00:11.422 88%

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

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

W sketch.ino - Wokwi Arduino and x IBM Watson IoT Platform x +

97mai0.internetofthings.ibmcloud.com/dashboard/devices/browse

IBM Watson IoT Platform

97mai0

ivamadhavan156@gmail.com

Browse Action Device Types Interfaces

Add Device +

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	{"Distance":399.98}	json	a few seconds ago
data	{"Distance":399.96}	json	a few seconds ago
data	{"Distance":399.96}	json	a few seconds ago
data	{"Distance":399.96}	json	a few seconds ago
data	{"Distance":399.96}	json	a few seconds ago

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Wokwi link: <https://wokwi.com/projects/347469000177877587>