

## Assignment 4

**Assignment Date: 19 September 2002**

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**Maximum marks: 2 marks**

**Project Title : IOT based safety gadget for child  
Monitoring & Notification**

**Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100cms send "alert" to ibm cloud and display in device recent events.**

CODE:

```
#include
<WiFi.h>#include<PubSubClient.h>
void callback(char* subscribeTopic, byte* payload, unsigned int payloadLength);
//-----credentials of IBM Accounts-----
#define ORG "Ashfaq1824" // IBM ORGANIZATION ID #define DEVICE_TYPE "ESP32" // Device type mentioned in IBM Watson IOT Platform #define DEVICE_ID "12345" // Device ID mentioned in IBM Watson IOT Platform #define TOKEN "12345678" // Token
String data3;
char server[] =
ORG".messaging.internetofthings.ibmcloud.com"; char publishTopic[] = "iot-2/evt/Data/fmt/json";
char subscribeTopic[] = "iot-2/cmd/test/fmt/String"; char authMethod[] = "use-token-auth";
char token[] = TOKEN; char clientId[] = "d:"ORG":DEVICE_TYPE":DEVICE_ID;
WiFiClient wifiClient; PubSubClient client(server, 1883, callback, wifiClient); const int trigPin = 5; const int echoPin = 18; #define SOUND_SPEED 0.034 long duration;
float distance;
void setup() {
```

```

Serial.begin(115200);pinMode(trigPin,OUTPUT);pinMode(echoPin,INPUT);wificonnect();mqttconnect();
}
voidloop()
{
digitalWrite(trigPin,LOW);delayMicroseconds(2);digitalWrite(trigPin,HIGH);delayMicroseconds(10);digitalWrite(trigPin,LOW);duration=pulseIn(echoPin,HIGH);
distance=duration*SOUND_SPEED/2;Serial.print("Distance(cm):");Serial.println(distance);if(distance<100)
{
Serial.println("ALERT!!");
delay(1000);PublishData(distance);delay(1000);if(!client.loop())
{mqttconnect();
}
}
delay(1000);
}
voidPublishData(floatdist)
{mqttconnect();
Stringpayload="{\"Distance\":";payload+=dist;payload+=",\"ALERT!!\":\"\"Distancelessthan100cms\"";payload+="}";
Serial.print("Sendingpayload:");Serial.println(payload);
}

if(client.publish(publishTopic,(char*)payload.c_str())){
Serial.println("Publishok");
}else{
Serial.println("Publishfailed");
}
}

voidmqttconnect(){if(!client.connected())
{Serial.print("Reconnectingclientto");Serial.println(server);while(!!!client.connect(clientId,authMethod,token)){Serial.print(".");
delay(500);
}
}

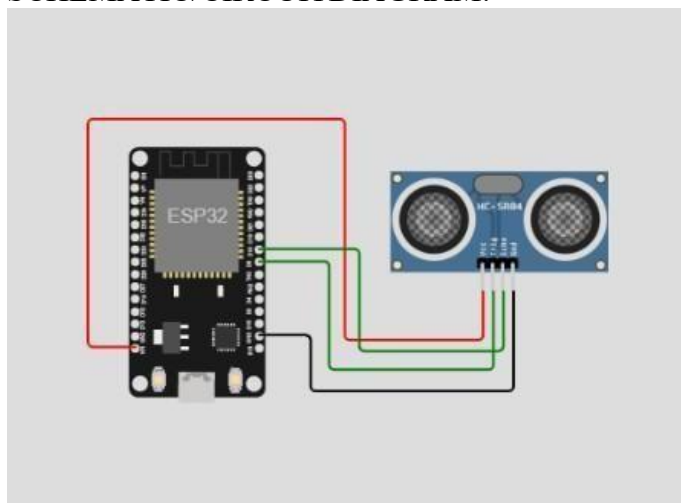
```

```

initManagedDevice();
Serial.println();
}
}
void wificonnect()
{
Serial.println();Serial.print("Connectin
g to ");WiFi.begin("Wokwi-
GUEST","",6);
while(WiFi.status()!=WL_CONNECTED)
{delay(500);
Serial.print(".");
}
Serial.println("");Serial.println("WiFic
onnected");Serial.println("IPaddress:");
Serial.println(WiFi.localIP());
}
void initManagedDevice(){
if(client.subscribe(subscribetopic))
{Serial.println((subscribetopic));Serial.println("subsc
ribetocmdOK");
}else{
Serial.println("subscribetocmdFAILED");
}
}
}
void callback(char*subscribetopic,byte*payload,unsignedintpayloadLength)
{
Serial.print("callbackinvokedfortopic:");Serial.printl
n(subscribetopic);
for(inti=0;i<payloadLength;i++){
//Serial.print((char)payload[i]);
data3+=(char)payload[i];
}
Serial.println("data:"+data3);da
ta3="";
}
}

```

SCHEMATIC/CIRCUITDIAGRAM:



## IBMCLOUDOUTPUT:

The screenshot displays the IBM Cloud IoT Platform interface. On the left is a dark sidebar with various icons. The top navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces'. A right sidebar contains an 'Add Device' button. The main content area is titled 'Recent Events' and shows a table of live data streams.

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
event_1	{"distance":7,"Alert":"Distance less than 10"}	json	a few seconds ago
event_1	{"distance":9,"Alert":"Distance less than 10"}	json	a few seconds ago
event_1	{"distance":8,"Alert":"Distance less than 10"}	json	a few seconds ago
event_1	{"distance":9,"Alert":"Distance less than 10"}	json	a few seconds ago

## WOKWILINK:

<https://wokwi.com/projects/322410731508073042>