

## ASSIGNMENT 4

**Assignment Date** :19 September 2022  
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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 devicerecent events.

CODE:

```
#include
<WiFi.h>#include<PubSub
Client.h>
voidcallback(char*subscribetopic,byte*payload,unsignedintpayloa
dLength);
//-----credentialsofIBMAccounts-----
#defineORG"Ashfaq1824"//IBMORGANITIONID
#defineDEVICE_TYPE"ESP32"//DevicetypementionedinibmwatsonIOTPlatform#defin
e DEVICE_ID "12345"//Device ID mentioned in ibm watson IOT
Platform#defineTOKEN"12345678"//Token
Stringdata3;
char server[] = ORG
".messaging.internetofthings.ibmcloud.com";charpublishTopic[]="
"iot-2/evt/Data/fmt/json";
charsubscribetopic[]="iot-
2/cmd/test/fmt/String";charauthMethod[]="use-
token-auth";
chartoken[]=TOKEN;
charclientId[]="d:"ORG":"DEVICE_TYPE":"DEVICE_ID;
WiFiClientwifiClient;
PubSubClient client(server, 1883,
callback ,wifiClient);const inttrigPin=5;
constintechoPin=18;
#defineSOUND_SPEED0.0341
ongduration;
float
distance;voids
etup(){
```

```

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();
String payload = "{"+"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);
}
}
}

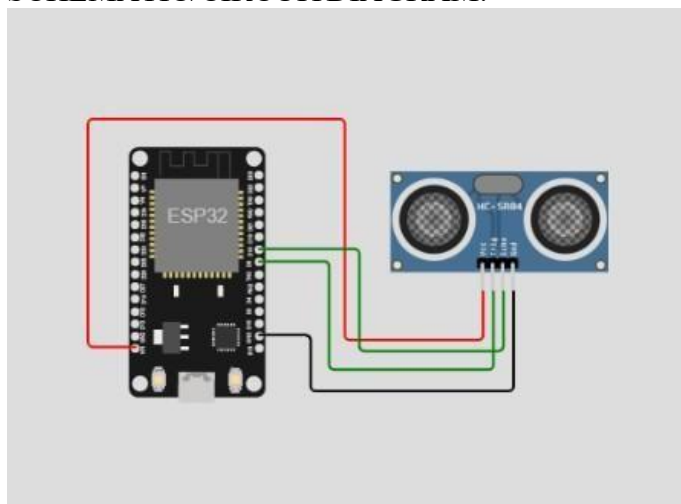
```

```

initManagedDevice();
Serial.println();
}
}
void wificonnect()
{
Serial.println();Serial.print("Connect
ing to ");WiFi.begin("Wokwi-
GUEST","",6);
while(WiFi.status()!=WL_CONNECTED)
{delay(500);
Serial.print(".");
}
Serial.println("");Serial.println("
WiFiconnected");Serial.println("I
Paddress:
");Serial.println(WiFi.localIP());
}
void initManagedDevice(){
if (client.subscribe(subscribetopic))
{Serial.println((subscribetopic));Serial.println("su
bscribetocmdOK");
}else{
Serial.println("subscribetocmdFAILED");
}
}
void callback(char*subscribetopic,byte*payload,unsignedintpayloadLength)
{
Serial.print("callbackinvokedfortopic:");
Serial.println(subscribetopic);
for (inti=0; i<payloadLength;i++){
//Serial.print((char)payload[i]);
data3+=(char)payload[i];
}
Serial.println("data:"+data3);da
ta3="";
}

```

SCHEMATIC/CIRCUITDIAGRAM:



## IBM CLOUD OUTPUT:

The screenshot displays the IBM Cloud Output interface. On the left is a dark sidebar with icons for various functions. The top navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces', along with an 'Add Device' button. The main content area has tabs for 'Identity', 'Device Information', 'Recent Events' (which is selected), 'State', and 'Logs'. Below the 'Recent Events' tab, a message states: 'The recent events listed show the live stream of data that is coming and going from this device.' A table follows, showing four recent events. Each event has an 'Event' name, a 'Value' in JSON format, a 'Format' of 'json', and a 'Last Received' time of 'a few seconds ago'.

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>