ASSIGNMENT -4

Write code and connections in wokwi for the ultrasonic sensor.

Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.

Upload document with wokwi share link and images of IBM cloud

Assignment Date	07-11-2022
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Maximum Marks	2 Marks

1. **Wowki Link:** https://wokwi.com/projects/347661984335921746
2. **Code:**

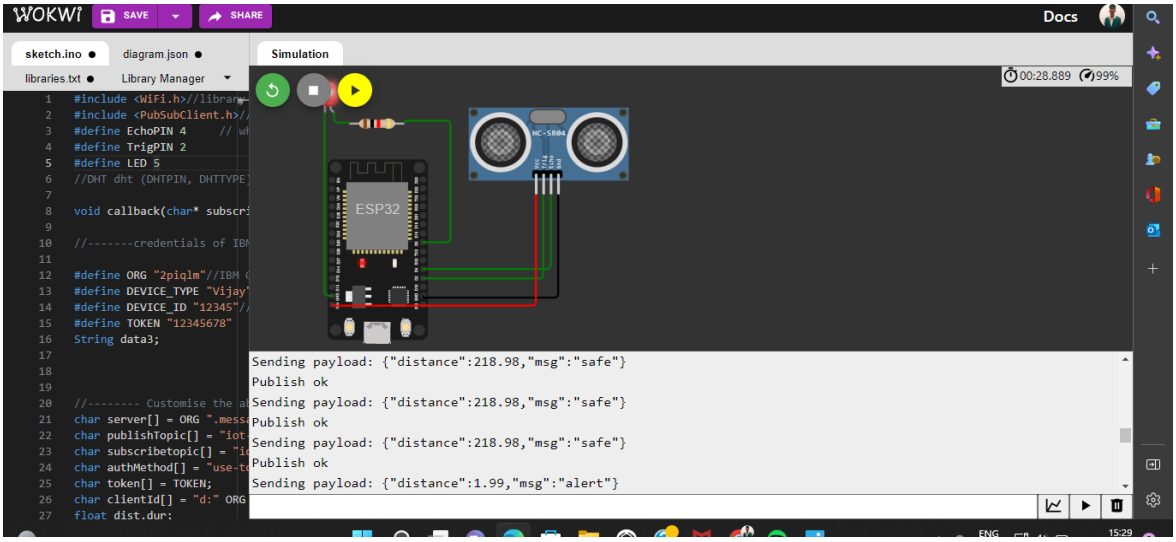
```
#include <WiFi.h>//library for wifi
#include <PubSubClient.h>//library for MQtt
#define EchoPIN 4     // what pin we're connected to
#define TrigPIN 2
#define LED 5
//DHT dht (DHTPIN, DHTTYPE);// creating the instance by passing pin and typr
of dht connected

void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);

//-------credentials of IBM Accounts------

#define ORG "2piqlm"//IBM ORGANITION ID
#define DEVICE_TYPE "Vijay"//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;
```

```
//-------- Customise the above values --------
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";// Server Name
char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of
event perform and format in which data to be send
char subscribetopic[] = "iot-2/cmd/command/fmt/String";// cmd  REPRESENT
command type AND COMMAND IS TEST OF FORMAT STRING
char authMethod[] = "use-token-auth";// authentication method
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id
float dist,dur;
String data;
//-----------------------------------------
WiFiClient wifiClient; // creating the instance for wificlient
PubSubClient client(server, 1883, callback ,wifiClient); //calling the
predefined client id by passing parameter like server id,portand
wificredential


void setup()// configureing the ESP32
{
  Serial.begin(115200);
  pinMode(TrigPIN, OUTPUT);
  digitalWrite(TrigPIN, LOW);
  pinMode(EchoPIN, INPUT);
  pinMode(LED,OUTPUT);
  delay(10);
  Serial.println();
  wificonnect();
  mqttconnect();
}

void loop()// Recursive Function
{

  digitalWrite(TrigPIN, HIGH);
  delayMicroseconds(10);
  digitalWrite(TrigPIN, LOW);

  dur = pulseIn(EchoPIN,HIGH);

  dist= dur *0.034 / 2;
if(dist<100)
  {
    data="alert";
    digitalWrite(LED,HIGH);

  }
  else{
    data="safe";
```

```
    digitalWrite(LED,LOW);

  }

  PublishData(dist);
  delay(1000);
  if (!client.loop()) {
    mqttconnect();
  }
}



/*.....................................retrieving to
Cloud.............................*/

void PublishData(float dist) {
  mqttconnect();//function call for connecting to ibm
  /*
     creating the String in in form JSon to update the data to ibm cloud
  */

  String payload = "{\"distance\":";
  payload += dist;
  payload += "," "\"msg\":\"";
  payload += data;
  payload += "\"}";


  Serial.print("Sending payload: ");
  Serial.println(payload);


  if (client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish ok");// if it sucessfully upload data on the cloud
then it will print publish ok in Serial monitor or else it will print publish
failed
  } else {
    Serial.println("Publish failed");
  }

}


void mqttconnect() {
  if (!client.connected()) {
    Serial.print("Reconnecting client to ");
    Serial.println(server);
    while (!!!client.connect(clientId, authMethod, token)) {
```

```
      Serial.print(".");
      delay(500);
    }

     initManagedDevice();
     Serial.println();
  }
}
void wificonnect() //function defination for wificonnect
{
  Serial.println();
  Serial.print("Connecting to ");

  WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish
the connection
  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }
  Serial.println("");
  Serial.println("WiFi connected");
  Serial.println("IP address: ");
  Serial.println(WiFi.localIP());
}

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

void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
{


}
```

3. Circuit:



4. Cloud Platform