ASSIGNMENT-4

DISTANCE DETECTION USING ULTRASONIC SENSOR

DATE	05 NOVEMBER 2022
TEAM ID	PNT2022TMID24841
NAME	V.MONISHREE
STUDENT ROLL NUMBER	210419106065
Maximum Marks	2 MARKS

QUESTION 1 :

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

WONKWI LINK :

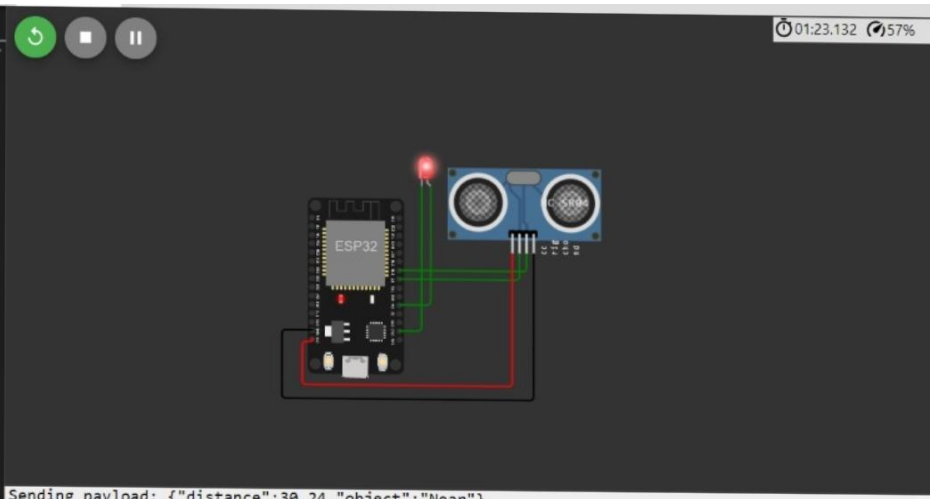
https://wokwi.com/projects/347472036582392403

CODE :

```
#include <WiFi.h>//library for wifi
#include <PubSubClient.h>//library for MQtt
#include <Ultrasonic.h>

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

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

#define ORG "5xoycs"//IBM ORGANITION ID
#define DEVICE_TYPE "ultrah"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "ultrasonic"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "kXN!WWz-)ZEZVXFiSQ"     //Token
String data3;
float dist;


//-------- 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/test/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


//-----------------------------------------
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

int LED=4;
int trig=5;
int echo=18;
void setup()// configureing the ESP32
```

```
int trig=5;
int echo=18;
void setup()// configureing the ESP32
{
  Serial.begin(115200);

  pinMode(trig,OUTPUT);
  pinMode(echo,INPUT);
  pinMode(LED,OUTPUT);
  delay(10);
  Serial.println();
  wificonnect();
  mqttconnect();
}

void loop()// Recursive Function
{

 digitalWrite(trig,LOW);
 digitalWrite(trig,HIGH);
 delayMicroseconds(10);
 digitalWrite(trig,LOW);
  float dur=pulseIn(echo,HIGH);
  float dist= (dur*0.0343)/2;
  Serial.print("Distance in centimeter:");
  Serial.println(dist);

  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 object;
  if(dist<100)
  {
    digitalWrite(LED,HIGH);
    Serial.println("object is near");
    object="Near";
  }
  else
  {
    digitalWrite(LED,LOW);
    Serial.println("no object found");
    object="No";
  }
  String payload = "{\"distance\":";
  payload += dist;
  payload += "," "\"object\":\"";
  payload += object;
  payload += "\"}";


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



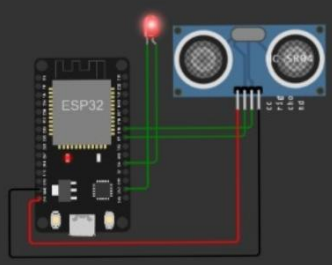

```
Sending payload: {"distance":30.24,"object":"Near"}
Publish ok
Distance in centimeter:30.24
object is near
Sending payload: {"distance":30.24,"object":"Near"}
Publish ok
```

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

```
  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
  } 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 esta
  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
```

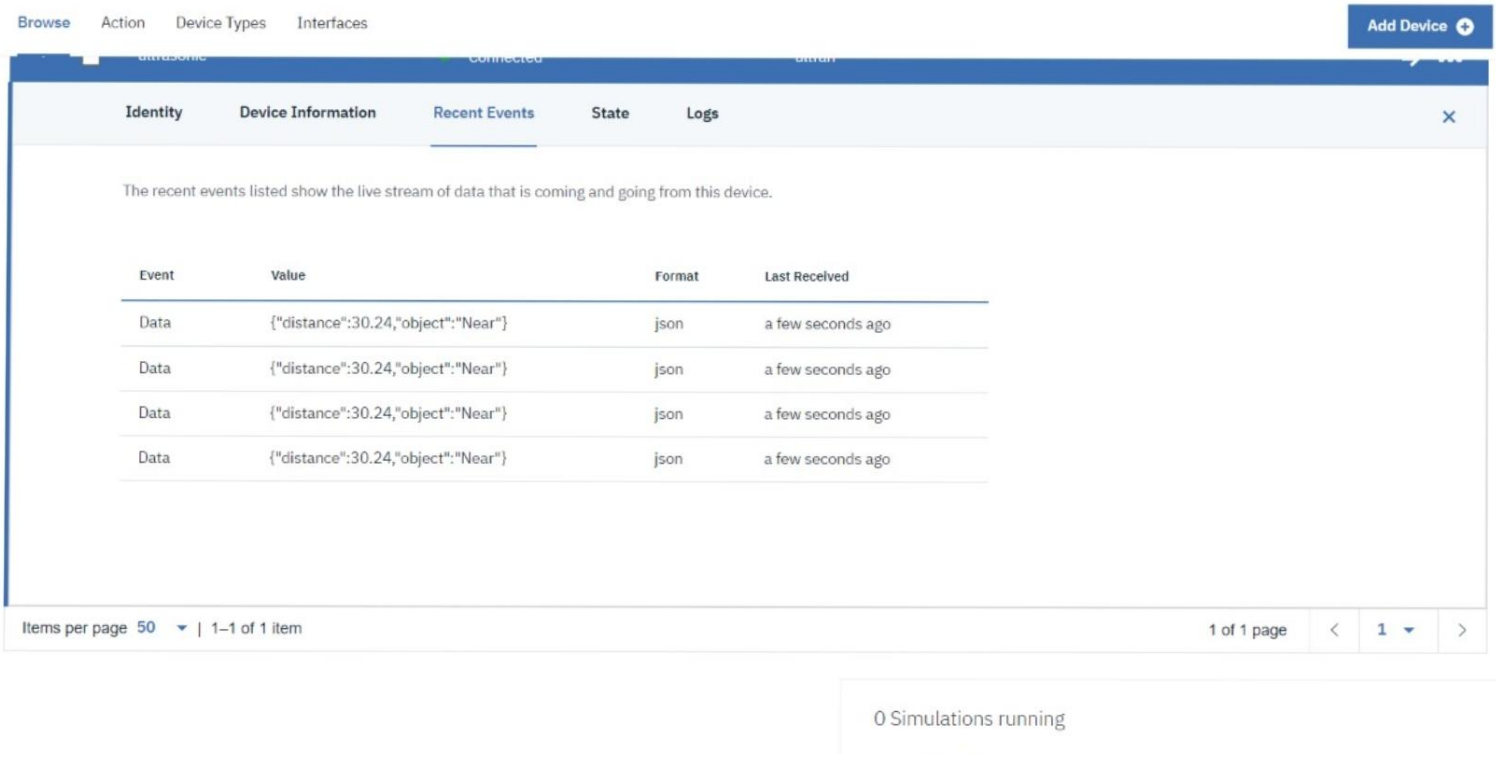
Simulation

01:29.096 67%




```
Sending payload: {"distance":30.24,"object":"Near"}
Publish ok
Distance in centimeter:30.24
object is near
Sending payload: {"distance":30.24,"object":"Near"}
Publish ok
```


sketch.ino
diagram.json
libraries.txt
Library Manager
Simulation
Docs
03:37.074
99%
HC-SR04
int trig=5;
int echo=18;
void setup()// conf
{
Serial.begin(1152
pinMode(trig,OUTP
pinMode(echo,INPU
pinMode(LED,OUTPU
delay(10);
Serial.println();
wificonnect();
mqttconnect();
}
void loop()// Recur
{
digitalWrite(trig,
digitalWrite(trig,
delayMicroseconds(
digitalWrite(trig,
float dur=pulseIn
float dist= (dur*
Serial.print("Dis
Serial.println(di
PublishData(dist)
delay(1000);
if (!client.loop(
Publish ok
Distance in centimeter:30.24
object is near
Sending payload: {"distance":30.24,"object":"Near"}
Publish ok
Distance in centimeter:30.24
object is near
Sending payload: {"distance":30.24,"object":"Near"}
Publish ok
Distance in centimeter:30.25
object is near
Sending payload: {"distance":30.25,"object":"Near"}
Publish ok
Distance in centimeter:30.24
object is near
Sending payload: {"distance":30.24,"object":"Near"}
Publish ok
Distance in centimeter:30.24
object is near
Sending payload: {"distance":30.24,"object":"Near"}
Publish ok
Distance in centimeter:30.24



0 Simulations running