ASSIGNMENT -4 :
TEAM ID : PNT2022TMID28864

Question :

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 .

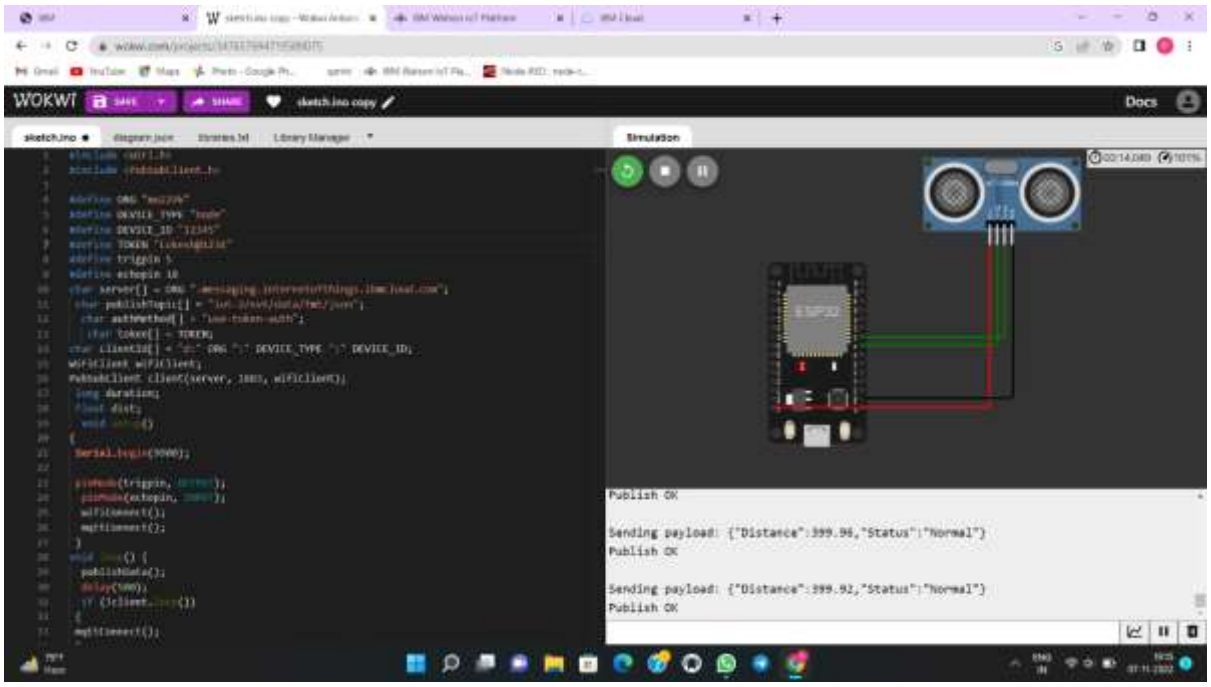
Solution:

```
#include <WiFi.h>
#include <PubSubClient.h>

#define ORG "mo229k"
#define DEVICE_TYPE "node"
#define DEVICE_ID "12345"
#define TOKEN "Lokesh@1234"
#define trigpin 5
#define echopin 18
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
 char publishTopic[] = "iot-2/evt/data/fmt/json";
  char authMethod[] = "use-token-auth";
   char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
WiFiClient wifiClient;
PubSubClient client(server, 1883, wifiClient);
 long duration;
 float dist;
  void setup()
{
 Serial.begin(9900);

 pinMode(trigpin, OUTPUT);
  pinMode(echopin, INPUT);
  wifiConnect();
  mqttConnect();
 }
void loop() {
  publishData();
  delay(500);
  if (!client.loop())
 {
 mqttConnect();
 }
}
void wifiConnect()
{
 Serial.print("Connecting to ");
```

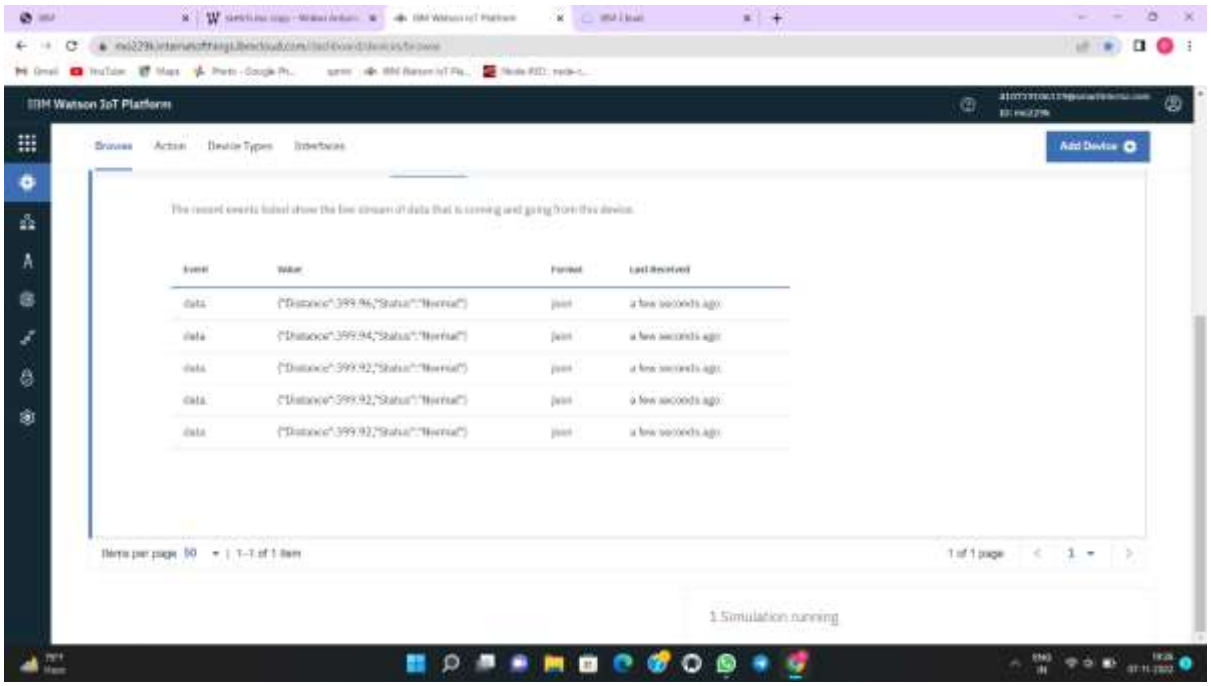
```
 Serial.print("Wifi");
  WiFi.begin("Wokwi-GUEST", "", 6);
  while (WiFi.status() != WL_CONNECTED)
 {
   delay(500);
 Serial.print(".");
 }
 Serial.print("WiFi connected, IP address: ");
 Serial.println(WiFi.localIP());
 }
void mqttConnect()
{  if (!client.connected())
 {
 Serial.print("Reconnecting MQTT client to ");
 Serial.println(server);
 while (!client.connect(clientId, authMethod, token))
 {
 Serial.print(".");
 delay(500);
 }
  Serial.println();
 }
  }
void publishData()
{  digitalWrite(trigpin,LOW);
 digitalWrite(trigpin,HIGH);
  delayMicroseconds(10);
  digitalWrite(trigpin,LOW);
  duration=pulseIn(echopin,HIGH);
   dist=(duration*0.034) /2;
    if(dist<100)
 {
 String payload = "{\"Distance\":";
  payload += dist;
   payload += ",";
    payload += "\"Status\":";
    payload += "\"Alert\"}";
 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 += ",";
payload += "\"Status\":";
payload += "\"Normal\"}";
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");
}
}
}
```

IBM CLOUD OUTPUT :



WOKWI LINK : https://wokwi.com/projects/347657694719509075


IBM Watson IoT Platform
Browse
Action
Device Types
Interfaces
Add Device
Event
Value
Format
Last Received
data
{"Distance":399.96,"Status":"Normal"}
json
a few seconds ago
data
{"Distance":399.94,"Status":"Normal"}
json
a few seconds ago
data
{"Distance":399.92,"Status":"Normal"}
json
a few seconds ago
data
{"Distance":399.92,"Status":"Normal"}
json
a few seconds ago
data
{"Distance":399.92,"Status":"Normal"}
json
a few seconds ago
Items per page: 50
1-1 of 1 item
1 of 1 page
1 Simulation running