Assignment - 4
C Programming

Assignment Date	26 October 2022
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Maximum Marks	2 Marks

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 "eq1sc7"
#define DEVICE_TYPE "IOT"
#define DEVICE_ID "1211"
#define TOKEN "123456789"
#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
```

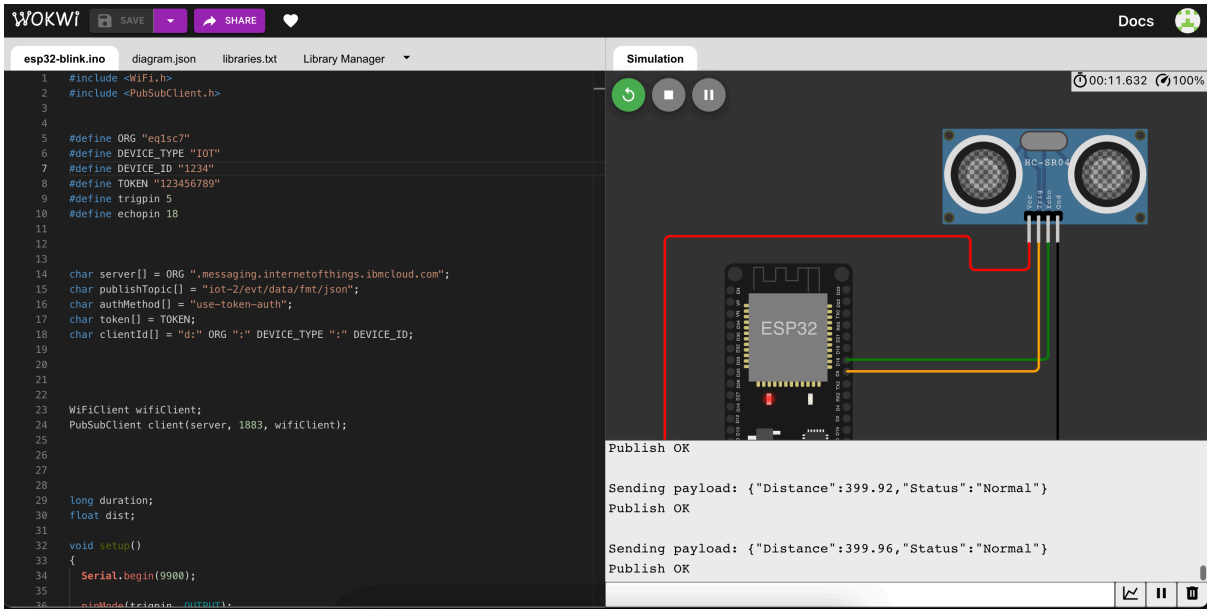
```
  {

    Serial.println("Publish FAILED");
  }

}


}
```

Output :



Woke link : https://wokwi.com/projects/347021544970519123