

## Assignment

### 4WokwiAssignmen

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MaximumMarks	2Marks

#### AssignmentQuestion:

Writecodeandconnections inwokwiforultrasonicsensor.

Wheneverdistanceislessthan

100cmssend"alert"toibmcloudanddisplayindevicerecentevents.

WokowiLink:<https://wokwi.com/projects/347327129936986708>

```
#include<WiFi.h>//libraryforwifi
```

```
#include<PubSubClient.h>//libraryforMQtt
```

```
#defineECHO_GPIO12
```

```
#defineTRIGGER_GPIO13
```

```
#defineMAX_DISTANCE_CM100//Maximumof5meters#include"Ultrasonic.h"
```

```
Ultrasonicultrasonic(13,12);i
```

```
ntdistance;
```

```
voidcallback(char*subscribetopic,byte*payload,unsignedintpayloadLength);
```

```
//-----credentialsofIBMAccounts-----
```

```
#defineORG "kizp10"//IBMORGANITIONID
```

```
#defineDEVICE_TYPE"IOTdevice"//DevicetypementionedinibmwatsonIOTPlatform#define
```

```
ine DEVICE_ID "1234567890"//Device ID mentioned in ibm watson IOT
```

```
Platform#defineTOKEN"1234567890" //Token
```

```
Stringdata3;
```

```
floatht;
```

```
//-----Customisetheabovevalues-----
```

```
charserver[]=ORG".messaging.internetofthings.ibmcloud.com";//ServerNamechar
```

```
publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of
```

eventperformandformatin whichdatatobe send

```
char subscribetopic[] = "iot-2/cmd/command/fmt/String";// cmdREPRESENT
```

```
commandtypeANDCOMMANDISTESTOFFORMATSTRING
```

```
charauthMethod[]="use-token-
```

```
auth";//authenticationmethodchartoken[] =TOKEN;
```

```
charclientId[]="d:"ORG":"DEVICE_TYPE":"DEVICE_ID";//clidtid
```

```
//--.....--
```

```
WiFiClientwifiClient;//creatingtheinstance forwificlient
```

```
PubSubClientclient(server,1883,callback,wifiClient);//callingthepredefinedclidtidby  
passing parameterlikeserverid,portandwificredential
```

```
voidsetup();//configureingthe ESP32
```

```
{  
  Serial.begin(115200);del  
  ay(10);Serial.println();wi  
  ficonnect();mqttconnect  
  ();  
}
```

```
voidloop();//RecursiveFunction
```

```
{  
  
  distance=ultrasonic.read(CM);if  
  (distance < 100)  
  {Serial.print("Distance in CM:  
  ");Serial.println(distance);Publis  
  hData(distance);delay(1000);  
  if (!client.loop())  
  {mqttconnect();  
  }  
  
}
```

```
delay(1000);
```

```

}

/*.....retrievingtoCloud..... */

void PublishData(float temp)
{mqttconnect();//functioncallforconnectingtoibm
/*
creatingtheStringin formJSonto updatethedatatobmcloud
*/
String payload = "{\"Alert
Distance\":\".\"";payload+=temp;
payload+="}";

Serial.print("Sendingpayload:");
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
willprintpublish okinSerialmonitororelseitwill printpublishfailed
}else{
    Serial.println("Publishfailed");
}
}

}

voidmqttconnect(){
if (!client.connected())
{Serial.print("Reconnecting client to
");Serial.println(server);
while(!!!client.connect(clientId,authMethod,token)){
    Serial.print(".");
    delay(500);
}

    initManagedDevice();
    Serial.println();
}
}

voidwificonnect();//functiondefinationforwificonnect
{
    Serial.println();Serial.print("C
onnectingto");

```

```

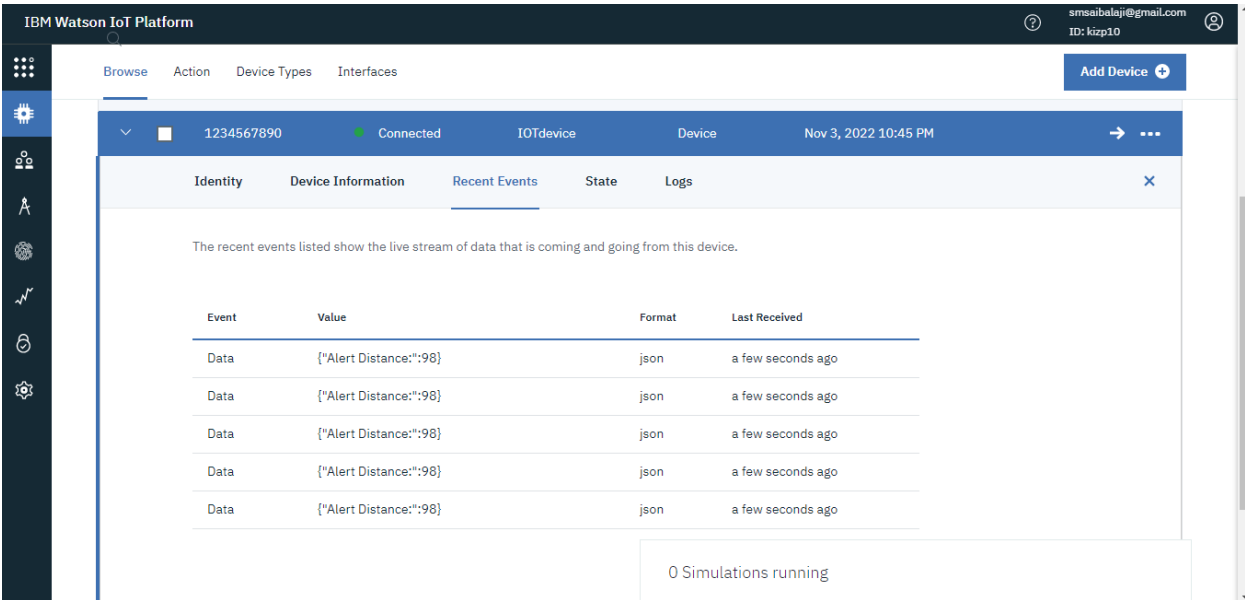
WiFi.begin("Wokwi-GUEST", "", 6); // passing the wifi credentials to establish the connection
while(WiFi.status() != WL_CONNECTED){ delay(500);
  Serial.print(".");
}
Serial.println(""); Serial.println("
WiFi
connected"); Serial.println("IP
address:
"); Serial.println(WiFi.localIP());
}

void initManagedDevice(){
  if (client.subscribe(subscribetopic))
    {Serial.println((subscribetopic)); Serial
    .println("subscribetocmdOK");
  }else{
    Serial.println("subscribetocmdFAILED");
  }
}

void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
{
  Serial.print("callback invoked for topic:");
  Serial.println(subscribetopic);
  for(int i=0; i<payloadLength; i++){
    //Serial.print((char)payload[i]);
    data3+=(char)payload[i];
  }
  Serial.println("data:" + data3); if
  (data3 == "lighton")
  {
    Serial.println(data3);
else
  {
    Serial.println(data3);
  }
  data3 = "";
}

```

When the distance is less than 100 cm the alert is not sent to the IBM cloud



When the distance is more than 100cm the alert is not sent to the IBM cloud

