Assignment 4

Assignment Date	28 October 2022
Student Name	Bharathraj B
Student Roll Number	722819106010
Maximum Marks	2 Marks

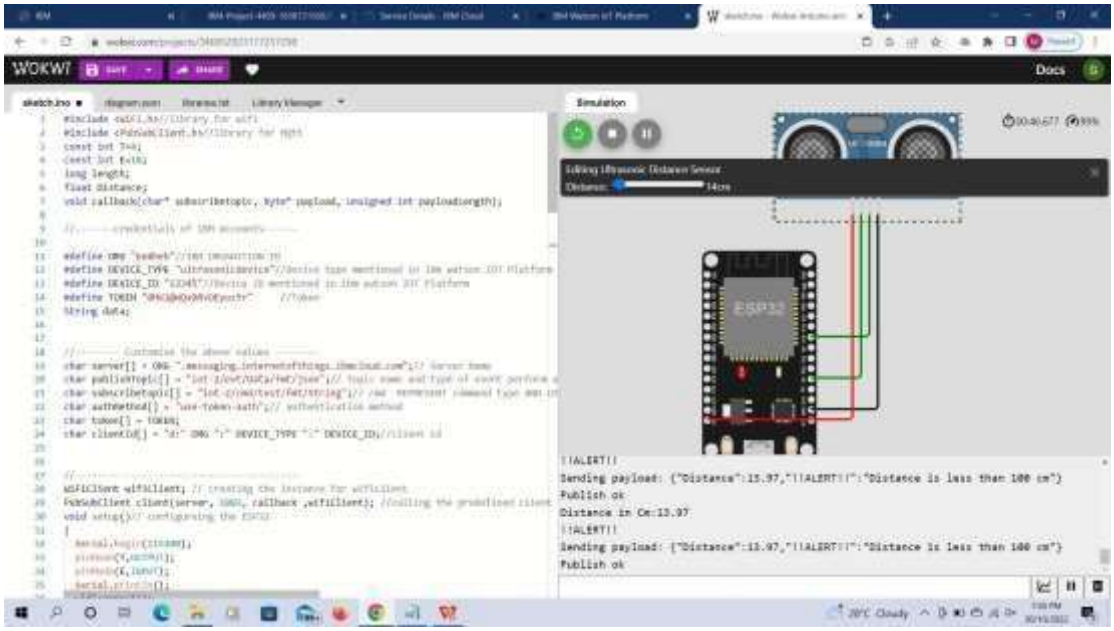
Write code and connections in wokwi for the ultrasonic sensor.
Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.
Upload document with wokwi share link and images of IBM cloud

```
#include <WiFi.h>//library for wifi #include
 <PubSubClient.h>//library for MQtt const int
T=4; const int E=18; long length; float Distance; void callback(char*
subscribetopic, byte* payload, unsigned int payloadLength);

#define ORG "6e8heb"
#define DEVICE_TYPE "ultrasonicdevice"
#define DEVICE_ID "12345"
 #define TOKEN "0Md1@wQs0RvOEyoz5r"
String data;


 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/fmt/json"; char
subscribetopic[] = "iot-2/cmd/test/fmt/String"; char
authMethod[] = "use-token-auth";
char token[] = TOKEN; char clientId[] = "d:" ORG ":"
DEVICE_TYPE ":" DEVICE_


WiFiClient wifiClient;
PubSubClient client(server, 1883, callback ,wifiClient);
void setup()
{
  Serial.begin(115200);
  pinMode(T,OUTPUT);
  pinMode(E,INPUT);
  Serial.println();
  wificonnect(); mqttconnect();
}

void loop()
{ digitalWrite(T,LOW);
  delay(1000);
  digitalWrite(T,HIGH);
  delay(1000); digitalWrite(T,LOW);
  length=pulseIn(E,HIG
  H);
  Distance=length*(0.03
  4/2);
  Serial.print("Distance in Cm:");
  Serial.println(Distance);
  if(Distance<100)
  {
```

```
    Serial.println("!!ALERT!!");
  delay(1000);
  PublishData(Distance);
  delay(1000); if (!client.loop())
  {
  mqttconnect();
  } } delay(1000)
  ;
}

void PublishData(float dist) {
  mqttconnect();/
  String payload = "{\"Distance\":";
  payload += dist;
  payload += ",\"!!ALERT!!\":""\"Distance is less than 100 cm\"";
  payload += "}";
  Serial.print("Sending payload: "); Serial.println(payload);


  if (client.publish(publishTopic, (char*) payload.c_str())) { Serial.println("Publish
    ok");
  } 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()
{
  Serial.println();
  Serial.print("Connecting to ");

  WiFi.begin("Wokwi-GUEST", "", 6); 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)
{

  Serial.print("callback invoked for topic:
  "); Serial.println(subscribetopic); for (int i
```

```
 = 0; i < payloadLength; i++) { data
  += (char)payload[i];
 }

 Serial.println("data: "+ data);
data=""; }
```

OUTPUT



Wokwi simulation link:

https://wokwi.com/projects/346952923117257298