ASSIGNMENT - 4

DATE	17 October 2022
TEAM ID	PNT2022TMID07000
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STUDENT ROLL NUMBER	GCTC1918116
MAXIMUM MARKS	2 Marks

QUESTION:

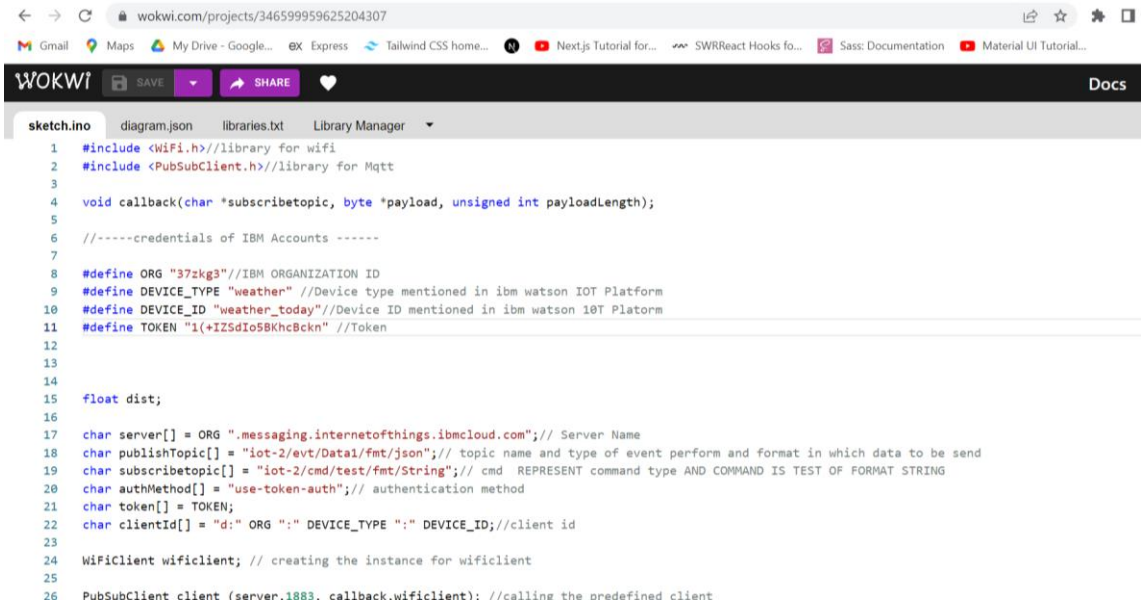
Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 cms send "alert" to ibm cloud and display in device recent events.

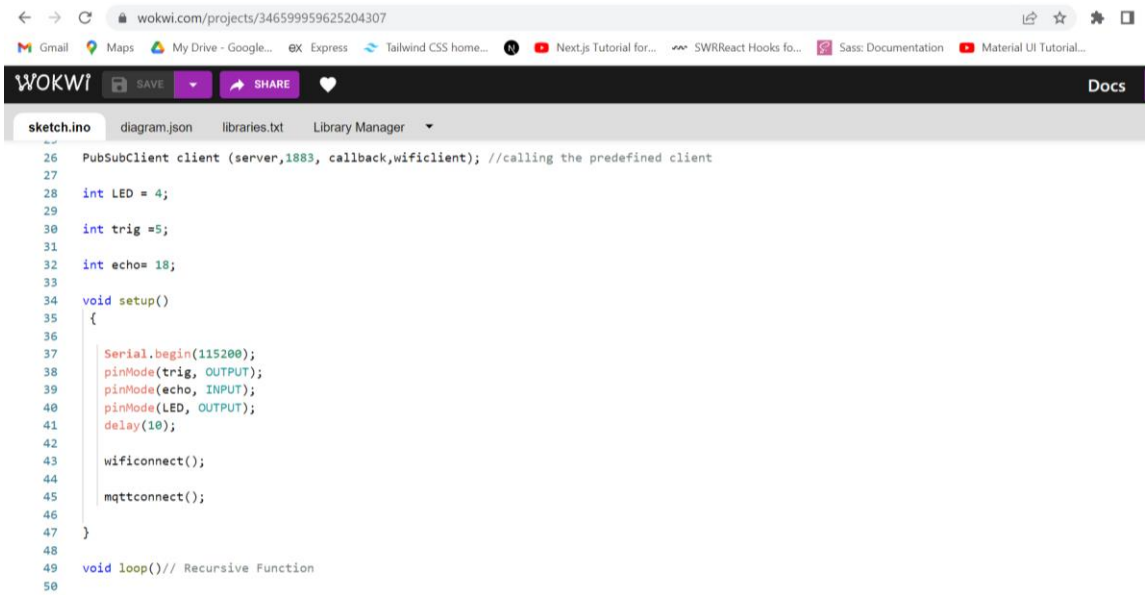
Upload document with wokwi share link and images of ibm cloud

WOKWI CODE AND IMPLEMENTATION LINK:

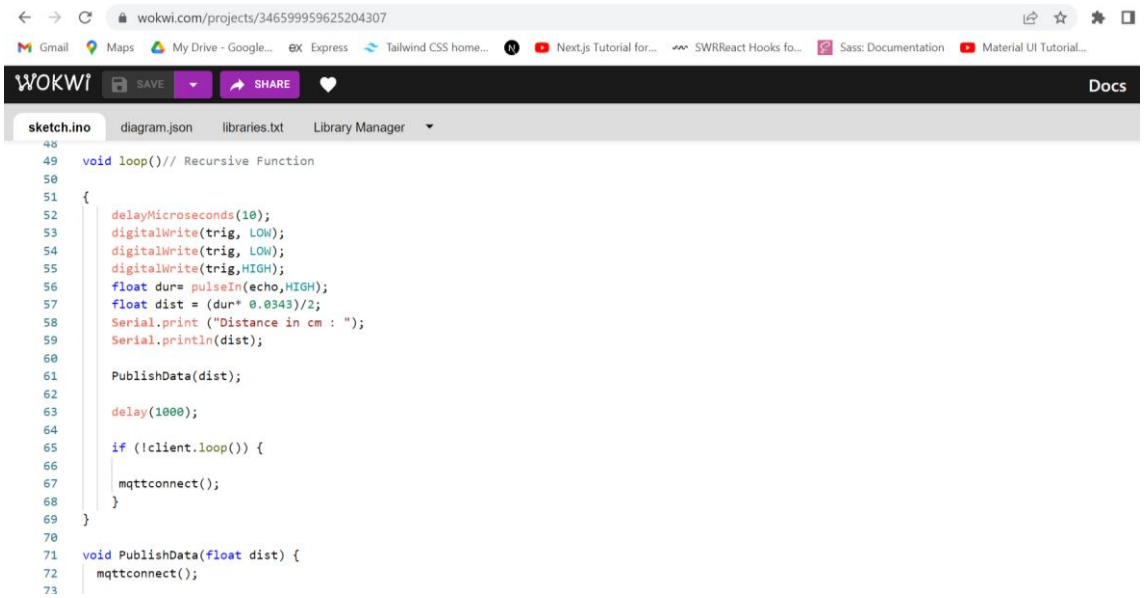
https://wokwi.com/projects/346599959625204307

CODE:

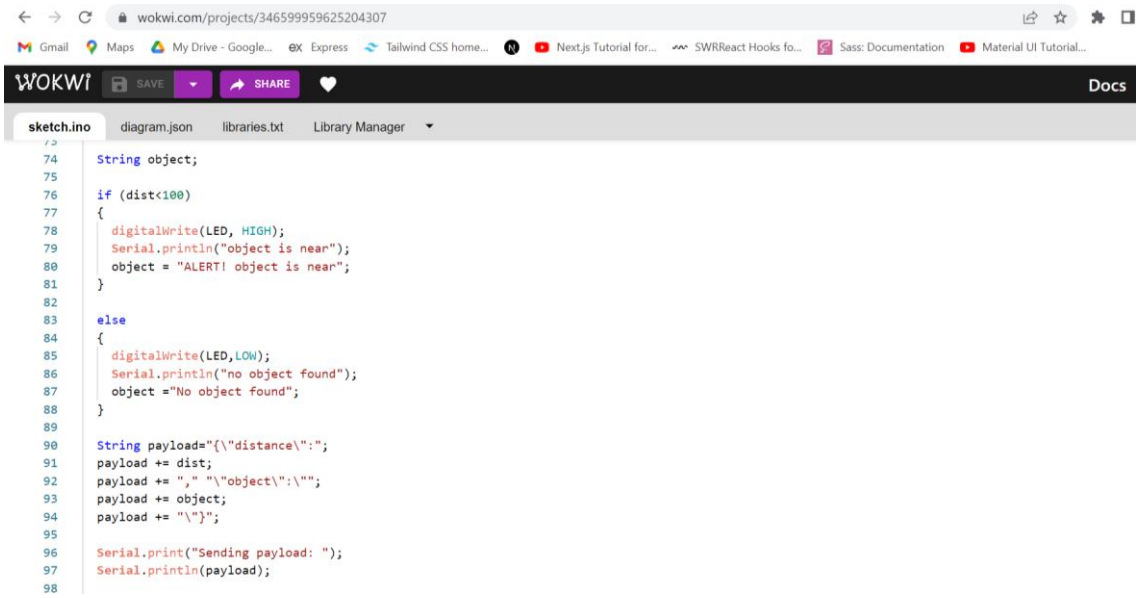




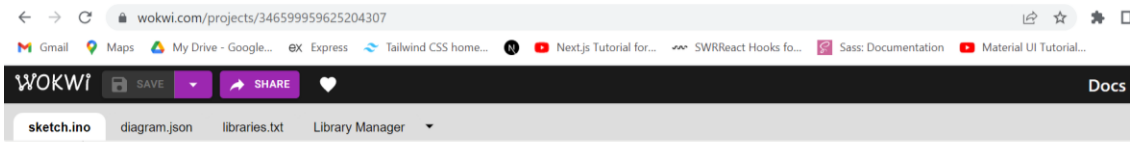

```
PubSubClient client (server,1883, callback,wificlient); //calling the predefined client

int LED = 4;

int trig =5;

int echo= 18;

void setup()
 {

   Serial.begin(115200);
   pinMode(trig, OUTPUT);
   pinMode(echo, INPUT);
   pinMode(LED, OUTPUT);
   delay(10);

   wificonnect();

   mqttconnect();

}

void loop()// Recursive Function

```



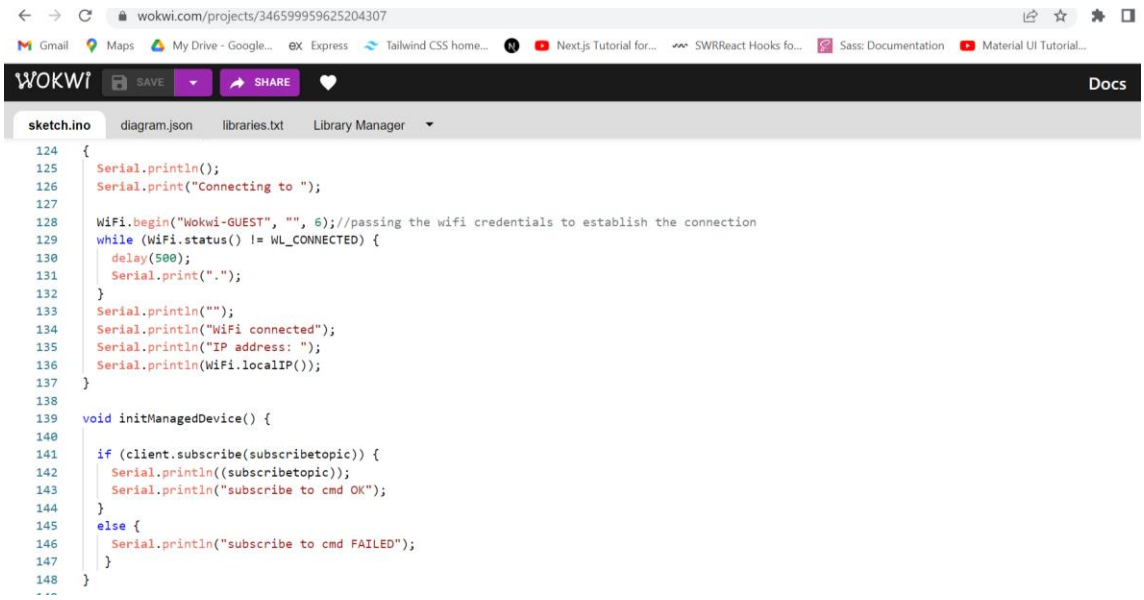

```
void loop()// Recursive Function

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

    PublishData(dist);

    delay(1000);

    if (!client.loop()) {

     mqttconnect();
    }
}

void PublishData(float dist) {
  mqttconnect();

```



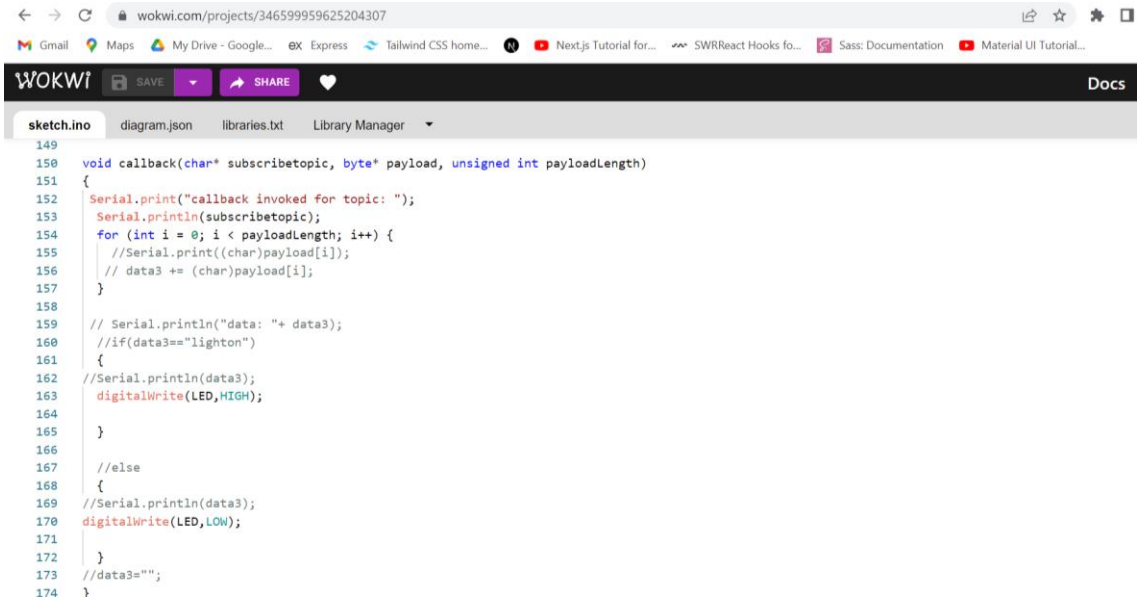

```
String object;

if (dist<100)
{
  digitalWrite(LED, HIGH);
  Serial.println("object is near");
  object = "ALERT! object is near";
}

else
{
  digitalWrite(LED,LOW);
  Serial.println("no object found");
  object ="No object found";
}

String payload="{\"distance\":";
payload += dist;
payload += "," "\"object\":\"";
payload += object;
payload += "\"}";

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

```




```
  if (client.publish(publishTopic, (char*) payload.c_str()))
  {
    Serial.println("Publish ok"); // if it sucessfully upload
  }
  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
```



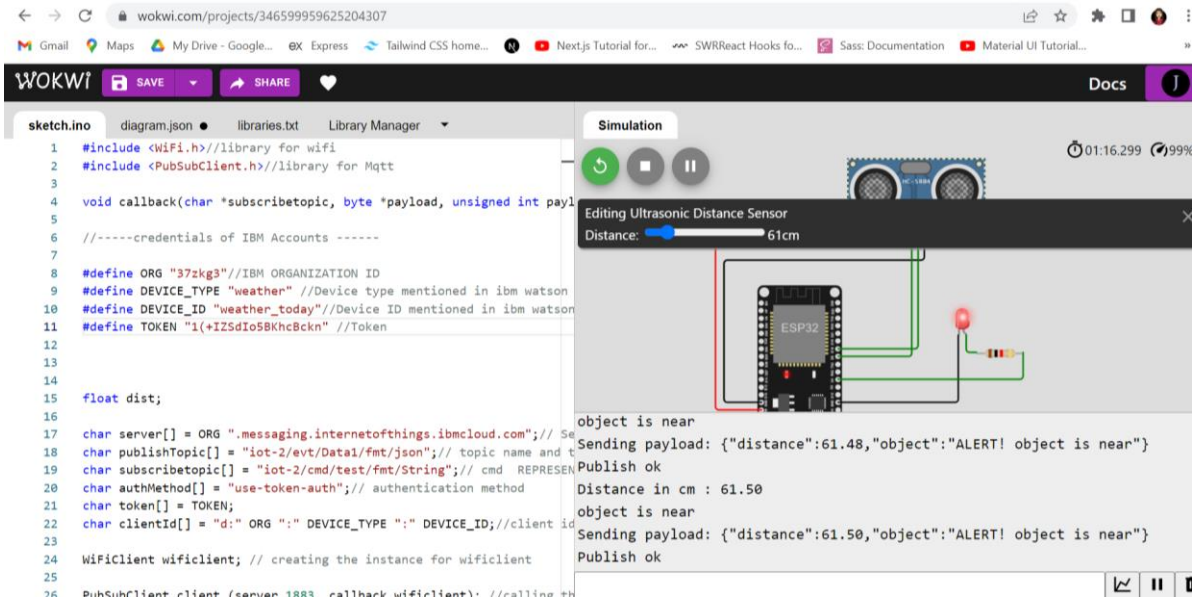

```
{
  Serial.println();
  Serial.print("Connecting to ");

  WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to 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("subscribe to cmd OK");
  }
  else {
    Serial.println("subscribe to cmd FAILED");
   }
}
```



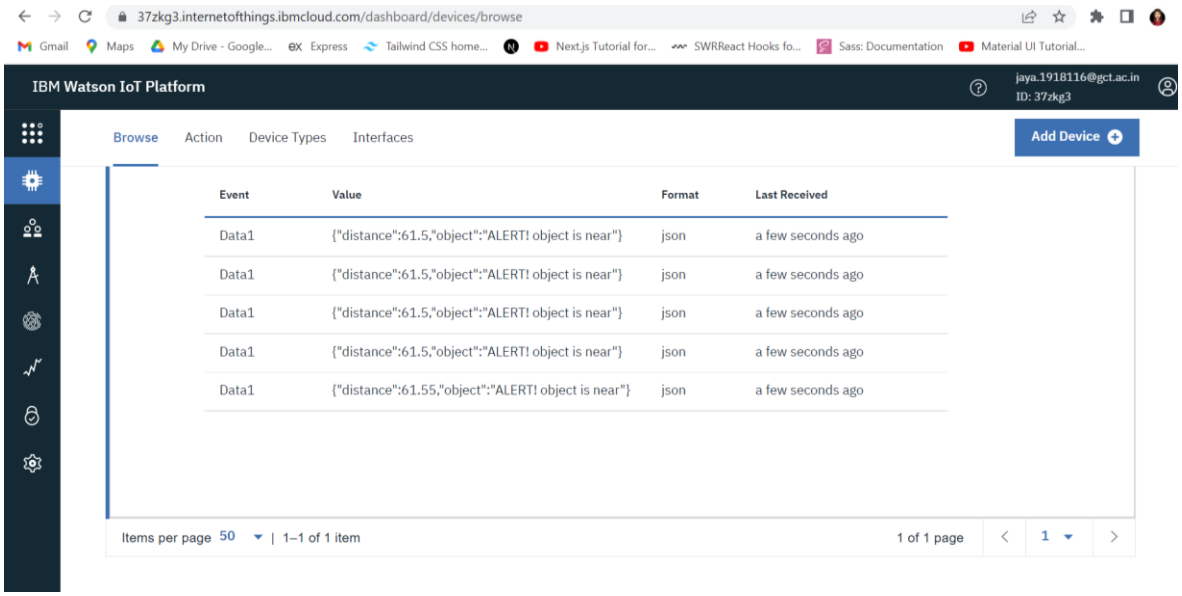

```

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++) {
    //Serial.print((char)payload[i]);
   // data3 += (char)payload[i];
  }

 // Serial.println("data: "+ data3);
  //if(data3=="lighton")
  {
//Serial.println(data3);
  digitalWrite(LED,HIGH);

  }

  //else
  {
//Serial.println(data3);
digitalWrite(LED,LOW);

  }
//data3="";
}
```

OUTPUT:

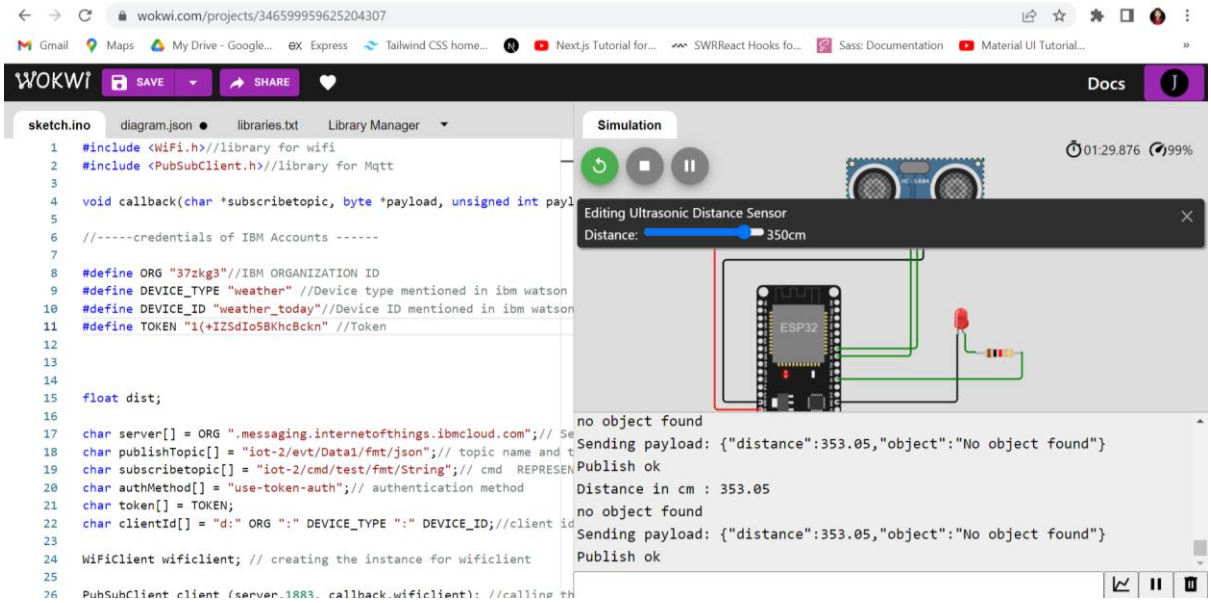
When the distance is less than 100 cms, send an “alert” message to IBM Watson IoT Platform



IBM CLOUD IMAGE



When the object is far(greater than 100 cms) , send “ no object found” to the IBM Watson IOT Platform.



IBM CLOUD IMAGE