Assignment -4

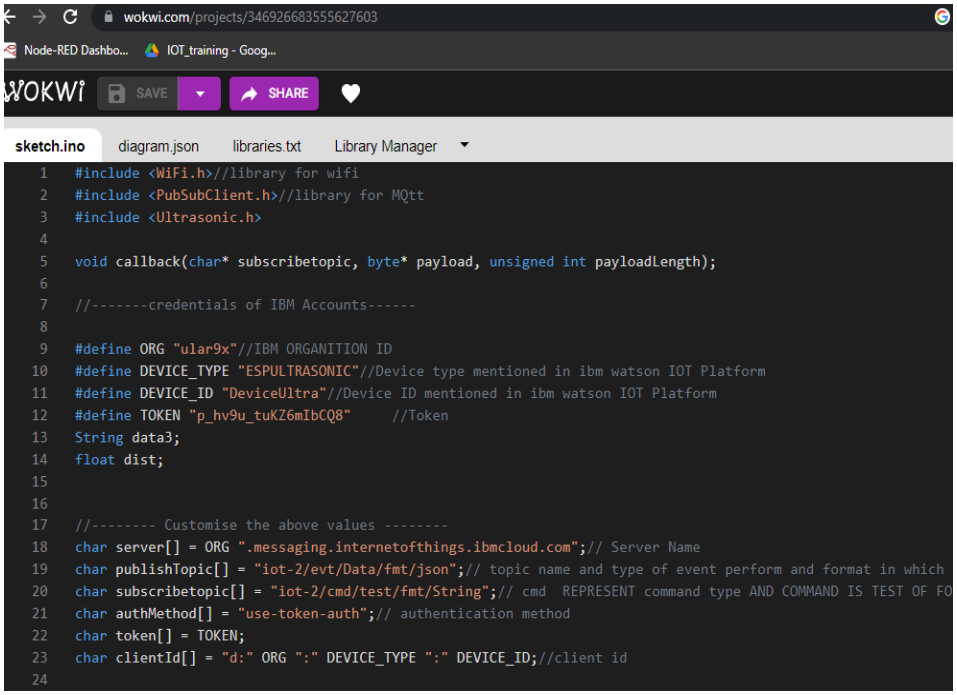
Assignment Date	30 OCTOBER 2022
Student Name	SNEHA .V
Student Roll Number	210419106108
Maximum Marks	2 Marks

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. Upload document with wokwi share link and images of IBM cloud

WOWKI LINK: https://wokwi.com/projects/346926683555627603

CODE



```
WiFiClient wifiClient; // creating the instance for wificlient
PubSubClient client(server, 1883, callback ,wifiClient); //calling the predefined cli

int LED=4;
int trig=5;
int echo=18;
void setup()// configureing the ESP32
{
  Serial.begin(115200);

  pinMode(trig,OUTPUT);
  pinMode(echo,INPUT);
  pinMode(LED,OUTPUT);
  delay(10);
  Serial.println();
  wificonnect();
  mqttconnect();
}

void loop()// Recursive Function
{

 digitalWrite(trig,LOW);
 digitalWrite(trig,HIGH);
```

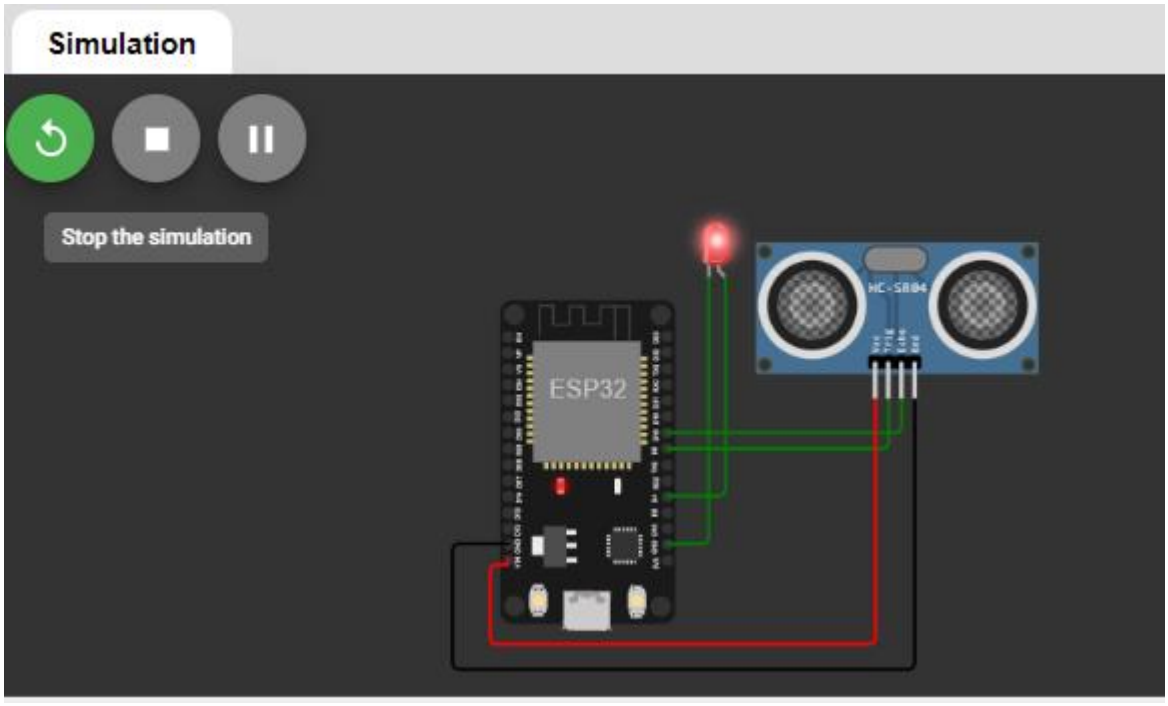
```
  delayMicroseconds(10);
  digitalWrite(trig,LOW);
   float dur=pulseIn(echo,HIGH);
   float dist= (dur*0.0343)/2;
   Serial.print("Distance in centimeter:");
   Serial.println(dist);

   PublishData(dist);
   delay(1000);
   if (!client.loop()) {
     mqttconnect();
   }
 }



 /*.....retrieving to Cloud.....

 void PublishData(float dist) {
   mqttconnect();//function call for connecting to ibm
   /*
      creating the String in in form JSon to update the data to ibm cloud
   */

```

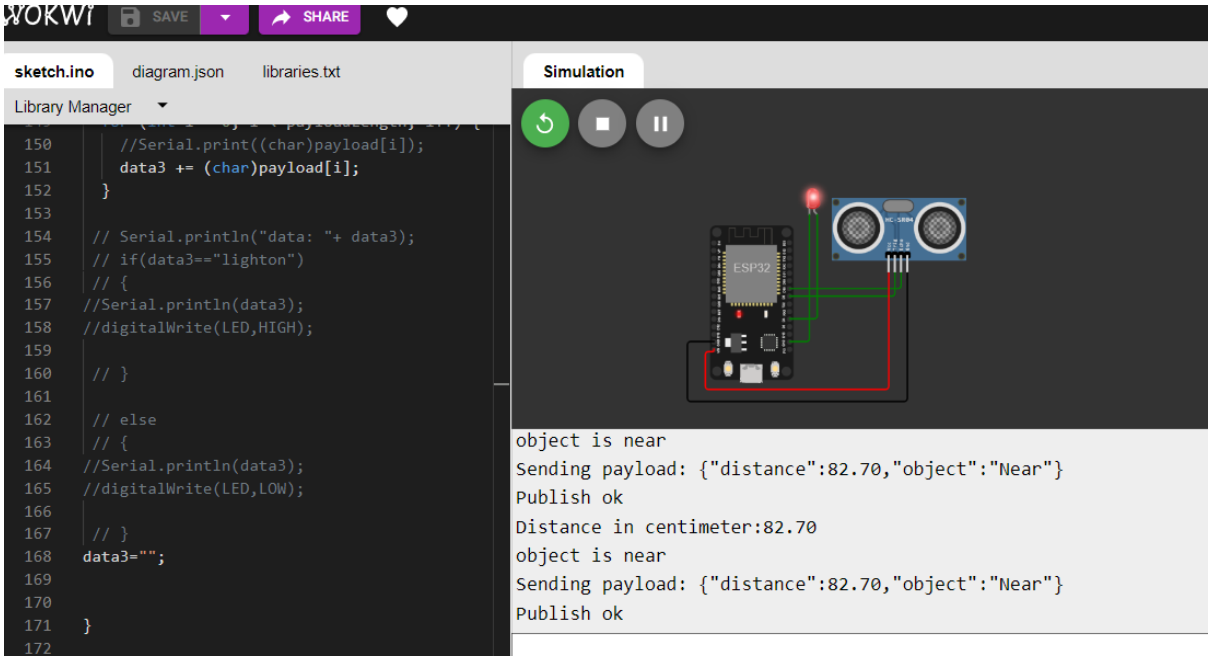
```
  String object;
  if(dist<100)
  {
    digitalWrite(LED,HIGH);
    Serial.println("object is near");
    object="Near";
  }
  else
  {
    digitalWrite(LED,LOW);
    Serial.println("no object found");
    object="No";
  }
  String payload = "{\"distance\":";
  payload += dist;
  payload += "," "\"object\":\"";
  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 data on the cloud then it will pr
  } 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
```

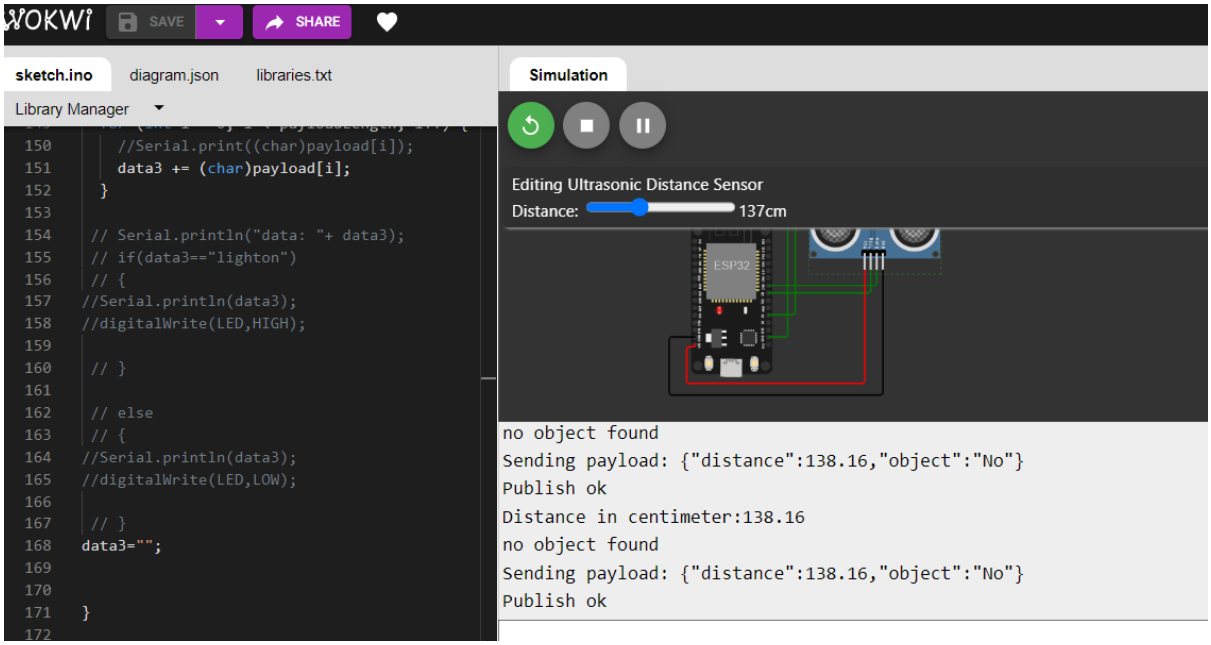
```
125     while (WiFi.status() != WL_CONNECTED) {
126       delay(500);
127       Serial.print(".");
128     }
129     Serial.println("");
130     Serial.println("WiFi connected");
131     Serial.println("IP address: ");
132     Serial.println(WiFi.localIP());
133   }
134
135   void initManagedDevice() {
136     if (client.subscribe(subscribetopic)) {
137       Serial.println((subscribetopic));
138       Serial.println("subscribe to cmd OK");
139     } else {
140       Serial.println("subscribe to cmd FAILED");
141     }
142   }
143
144   void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
145   {
146
147     Serial.print("callback invoked for topic: ");
148     Serial.println(subscribetopic);
149     for (int i = 0; i < payloadLength; i++) {
```

```
150       //Serial.print((char)payload[i])
151       data3 += (char)payload[i];
152     }
153
154    // Serial.println("data: "+ data3);
155    // if(data3=="lighton")
156    // {
157   //Serial.println(data3);
158   //digitalWrite(LED,HIGH);
159
160    // }
161
162    // else
163    // {
164   //Serial.println(data3);
165   //digitalWrite(LED,LOW);
166
167    // }
168   data3="";
169
170
171   }
172
```

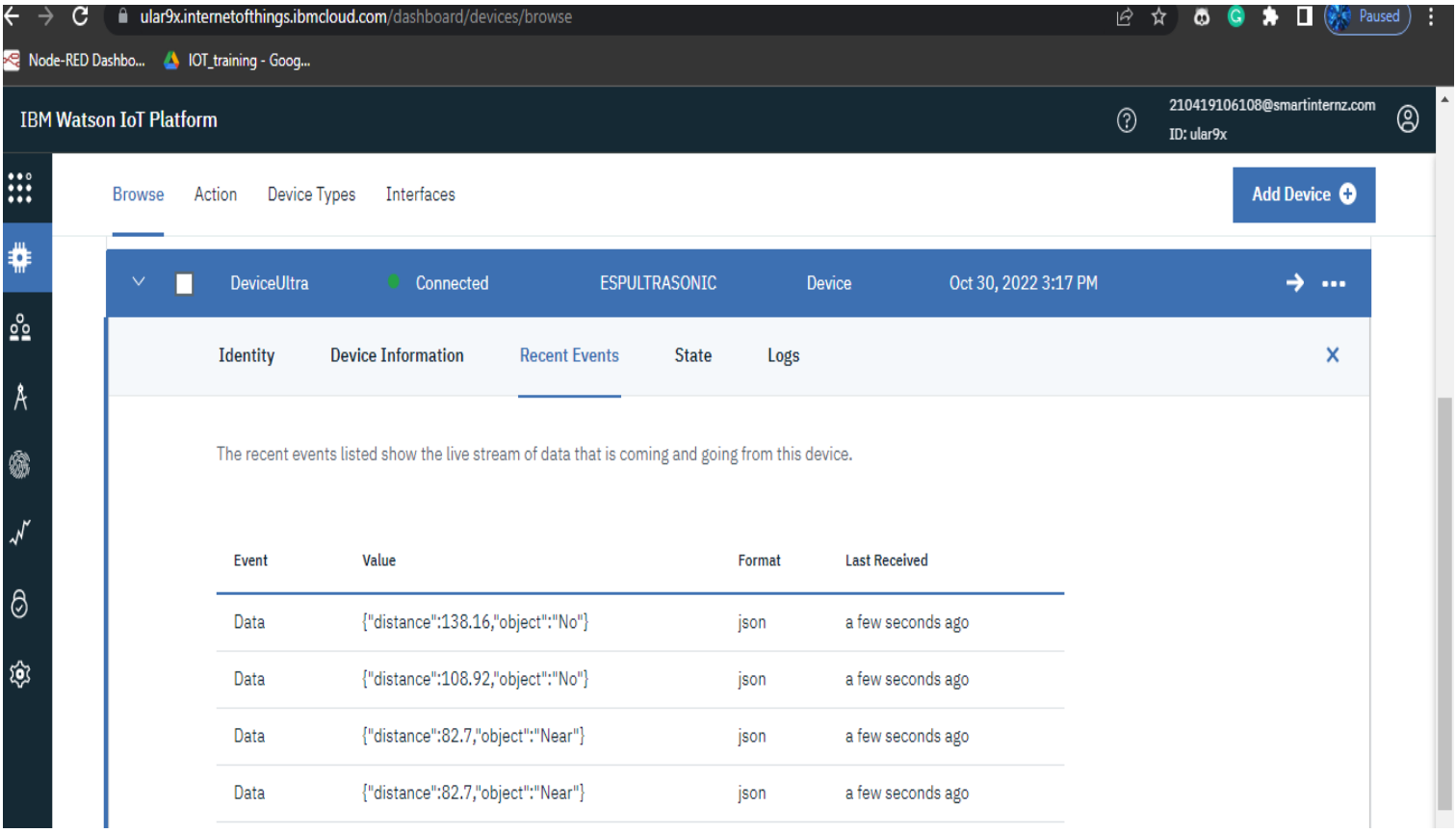
CIRCUIT DIAGRAM






WOKWI
SAVE
SHARE
sketch.ino
diagram.json
libraries.txt
Library Manager
//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="";
}
Simulation
Editing Ultrasonic Distance Sensor
Distance:
137cm
ESP32
no object found
Sending payload: {"distance":138.16,"object":"No"}
Publish ok
Distance in centimeter:138.16
no object found
Sending payload: {"distance":138.16,"object":"No"}
Publish ok

IBM CLOUD


ular9x.internetofthings.ibmcloud.com/dashboard/devices/browse
Paused
Node-RED Dashbo...
IOT_training - Goog...
IBM Watson IoT Platform
210419106108@smartinternz.com
ID: ular9x
Browse
Action
Device Types
Interfaces
Add Device
DeviceUltra
Connected
ESPULTRASONIC
Device
Oct 30, 2022 3:17 PM
Identity
Device Information
Recent Events
State
Logs
The recent events listed show the live stream of data that is coming and going from this device.
Event
Value
Format
Last Received
Data
{"distance":138.16,"object":"No"}
json
a few seconds ago
Data
{"distance":108.92,"object":"No"}
json
a few seconds ago
Data
{"distance":82.7,"object":"Near"}
json
a few seconds ago
Data
{"distance":82.7,"object":"Near"}
json
a few seconds ago