ASSIGNMENT 4

TEAM ID	PNT2022TMID42281
Distance Detection Using Ultrasonic Sensor Assignment Date	5 November 2022
Student Name	Kanimozhi M
Student Roll Number	710019106020
Maximum Marks	2 Marks

WOKWI CODE:

```
#include <WiFi.h>//library for wifi

#include <PubSubClient.h>//library for MQtt  void callback(char* subscribetopic,

byte* payload, unsigned int payloadLength);

//-------credentials of IBM Accounts------

#define ORG "0kflrb"//IBM ORGANITION ID

#define DEVICE_TYPE "kanimonidevice"//Device type mentioned in ibm watson IOT Platform

#define DEVICE_ID "7890"//Device ID mentioned in ibm watson IOT Platform

#define TOKEN "12345678"     //Token

String data3; float dist;

//-------- Customise the above values -------- char server[] = ORG

".messaging.internetofthings.ibmcloud.com";// Server Name

char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of event perform and format
in which data to be send

char subscribetopic[] = "iot-2/cmd/test/fmt/String";// cmd  REPRESENT command type AND
COMMAND IS TEST OF FORMAT STRING

char authMethod[] = "use-token-auth";// authentication method

char token[] = TOKEN; char clientId[] = "d:" ORG ":" DEVICE_TYPE

":" DEVICE_ID;//client id

//-----------------------------------------

WiFiClient wifiClient; // creating the instance for wificlient

PubSubClient client(server, 1883, callback ,wifiClient); //calling the predefined client id by passing
parameter like server id,portand wificredential 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
{

 digitalWrite(trig,LOW);
digitalWrite(trig,HIGH);
delayMicroseconds(10);
digitalWrite(trig,LOW);   float
dur = pulseIn(echo,HIGH);   float
dist = (dur * 0.0343)/2;
  Serial.print ("Distancein cm");
  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";
  }

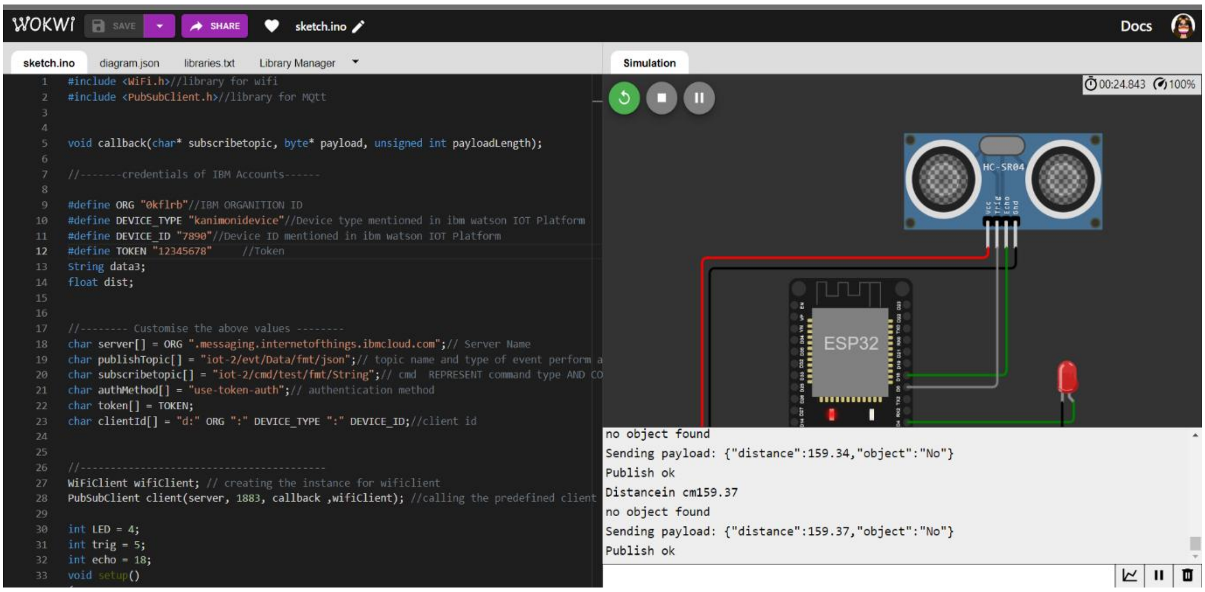
String payload = "{\"distance\":";
payload += dist;   payload += ","
"\"object\":\"";   payload +=
object;   payload += "\"}";
Serial.print("Sending payload: ");
Serial.println(payload);

 if (client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish ok");// if it sucessfully upload data on the cloud then it will print publish ok
in Serial monitor or else it will print publish failed
  } 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 ");
```

WOKWI LINK: https://wokwi.com/projects/348053637539299922

WOKWI CIRCUIT DIAGRAM AND WOKWI OUTPUT:



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//-----------------------------------------
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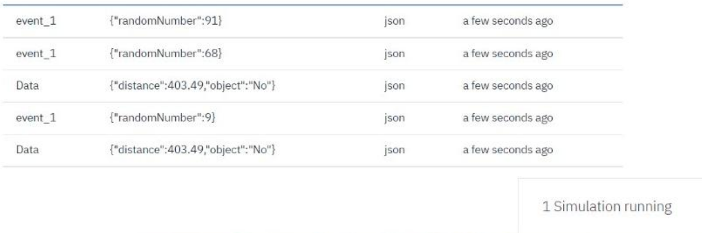
PubSubClient client(server, 1883, callback ,wifiClient); //calling the predefined client
 
int LED = 4;
int trig = 5;
int echo = 18;
void setup()
```

```
no object found
Sending payload: {"distance":159.34,"object":"No"}
Publish ok
Distancein cm159.37
no object found
Sending payload: {"distance":159.37,"object":"No"}
Publish ok
```

IBM WATSON OUTPUT:



event_1	{"randomNumber":91}	json	a few seconds ago
event_1	{"randomNumber":68}	json	a few seconds ago
Data	{"distance":403.49,"object":"No"}	json	a few seconds ago
event_1	{"randomNumber":9}	json	a few seconds ago
Data	{"distance":403.49,"object":"No"}	json	a few seconds ago

1 Simulation running