Distance Detection Using Ultrasonic Sensor Assignment Date	6 November 2022
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Maximum Marks	2 Marks

ASSIGNMENT 4

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 " qz2oyu "//IBM ORGANITION ID

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

#define DEVICE_ID "1"//Device ID mentioned in ibm watson IOT Platform

#define TOKEN " Naveen@12"     //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);
```

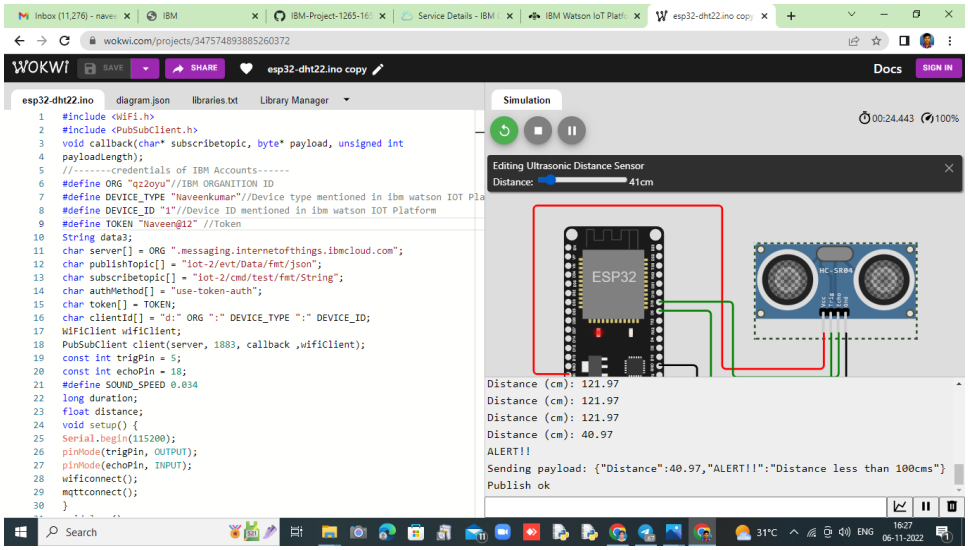
```
if (client.publish(publishTopic, (char*) payload.c_str())) {
   Serial.println("Publish ok");/
/ if it sucessfully upload data on the cloud then it will print publish ok in Serial monitor or else it will print publish failed
 }
else {
   Serial.println("Publish failed");
  }

}
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 ");

  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=="Near")
//   {
// Serial.println(data3);
```

```
// digitalWrite(LED,HIGH);


//   }


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


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

WOKWI LINK: https://wokwi.com/projects/347574893885260372

WOKWI CIRCUIT DIAGRAM AND WOKWI OUTPUT:



IBM WATSON OUTPUT: