Assignment -4

Assignment Date	7 November 2022
Student Name	Ashwin Raj K
Student Roll Number	737819ECR014
Maximum Marks	2 Marks

Question-1:

Write code and connections in wokwi for ultrasonic sensor.

Whenever distance is less than 100cms send “alert” to IBM cloud and display in device recent events.

Wokwi Project Link: https://wokwi.com/projects/347659714858844756

```
#include <WiFi.h>
#include <PubSubClient.h>
#define TRIGGER 2
#define ECHO 15
#define sound_speed 0.034
int distance;

void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);

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

#define ORG "sgoqkq"
#define DEVICE_TYPE "Gas_Leakage_Detection_Device"
#define DEVICE_ID "Gas_Leakage_Detection_Device1"
#define TOKEN "123456789"
String data3;


//-------- Customise the above values --------
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_ID;


//-----------------------------------------
WiFiClient wifiClient;
PubSubClient client(server, 1883, callback ,wifiClient);
void setup()
{
  Serial.begin(115200);
  pinMode(TRIGGER, OUTPUT);
  pinMode(ECHO, INPUT);
  delay(10);
  Serial.println();
  wificonnect();
  mqttconnect();
```

```
}

void loop()
{

  digitalWrite(TRIGGER, HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIGGER, LOW);

  int duration=pulseIn(ECHO,HIGH);
  distance=(duration*sound_speed)/2;
  Serial.print("Distance:");
  Serial.print(distance);
  Serial.println("cms");
  if(distance<100){
    PublishData(distance);
  }
  delay(1000);
  if (!client.loop()) {
    mqttconnect();
  }
}



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

void PublishData(int d) {
  mqttconnect();

  String payload = "{\"message\":\"alert\"}";

  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++) {
    data3 += (char)payload[i];
  }

  Serial.println("data: "+ data3);

data3="";


}
```

Wokwi Platform Coding and Circuit Design

WOKWI SAVE SHARE sketch.ino Docs

sketch.ino ● diagram.json ● libraries.txt ● Library Manager

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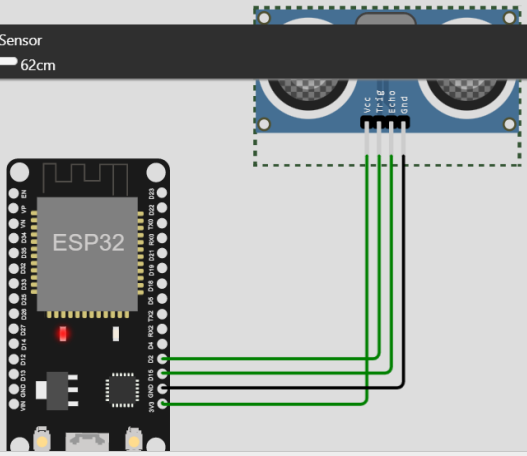
Simulation

00:16.567 101%

Editing Ultrasonic Distance Sensor
Distance: 62cm




```
Distance:109cms
Distance:81cms
Sending payload: {"message":"alert"}
Publish ok
Distance:56cms
Sending payload: {"message":"alert"}
Publish ok
```

IBM IoT Platform Device Recent Events

Browse Action Device Types Interfaces Add Device

Gas_Leakage_Detection_Device1 Connected Gas_Leakage_Detection_Device Device Oct 8, 2022 9:57 AM

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	{"message":"alert"}	json	a few seconds ago
Data	{"message":"alert"}	json	a few seconds ago
Data	{"message":"alert"}	json	a few seconds ago
Data	{"message":"alert"}	json	a few seconds ago
Data	{"message":"alert"}	json	a few seconds ago

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