Assignment - 4

Assignment Date	**17 October 2022**
Student Name	**Harsihraaj S**
Student Roll Number	**737819CSR057**
Maximum Marks	**2 Marks**

Question-1:

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

CODE 1 :

```
#include <WiFi.h> #include
<PubSubClient.h>
void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);
//-------credentials of IBM Accounts------
#define ORG "cbseji"//IBM ORGANITION ID
#define DEVICE_TYPE "abcd"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "1234"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "12345678" //Token
String data3;
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);
const int trigPin = 5; const int echoPin = 18;
#define SOUND_SPEED 0.034
long  duration;  float  distance;
void          setup()          {
Serial.begin(115200);
pinMode(trigPin,    OUTPUT);
pinMode(echoPin, INPUT);
wificonnect(); mqttconnect();
}
void loop()
{ digitalWrite(trigPin, LOW);
delayMicroseconds(2);
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW); duration =
pulseIn(echoPin, HIGH); distance =
duration * SOUND_SPEED/2;
Serial.print("Distance (cm): ");
Serial.println(distance); if(distance<100)
{
```

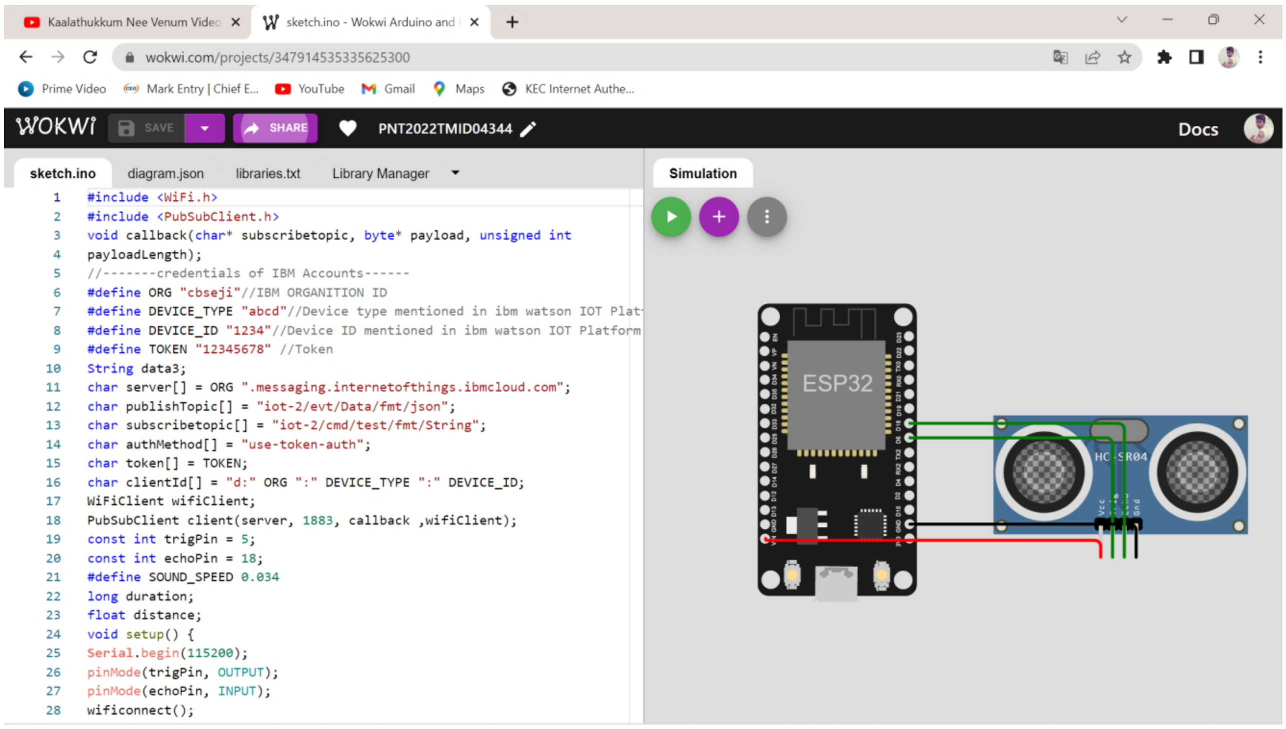
```
Serial.println("ALERT!!");
delay(1000);
PublishData(distance);
delay(1000); if
(!client.loop()) {
mqttconnect();
} }
delay(1000);
}
void PublishData(float dist) { mqttconnect();
String payload = "{\"Distance\":"; payload
+= dist;
payload += ",\"ALERT!!\":""\"Distance less than 100cms\"";
payload += "}";
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++) {
//Serial.print((char)payload[i]); data3 +=
(char)payload[i];
}
Serial.println("data: "+ data3); data3="";
}
```

Wokwi Link :

https://wokwi.com/projects/347914535335625300

Output and Simulation :



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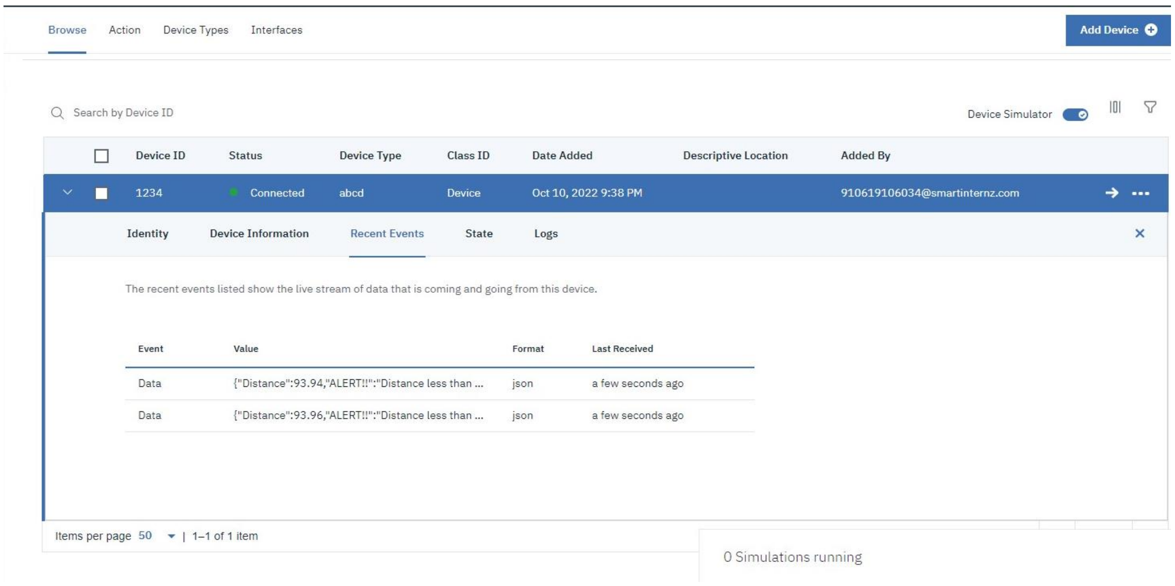
Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.



Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location	Added By
1234	Connected	abcd	Device	Oct 10, 2022 9:38 PM		910619106034@smartinternz.com

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":93.94,"ALERT!!":"Distance less than ...	json	a few seconds ago
Data	{"Distance":93.96,"ALERT!!":"Distance less than ...	json	a few seconds ago

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0 Simulations running