Assignment -4

Assignment Date	19 September 2022
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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

Wowki link: https://wokwi.com/projects/347280270780531283

Program:

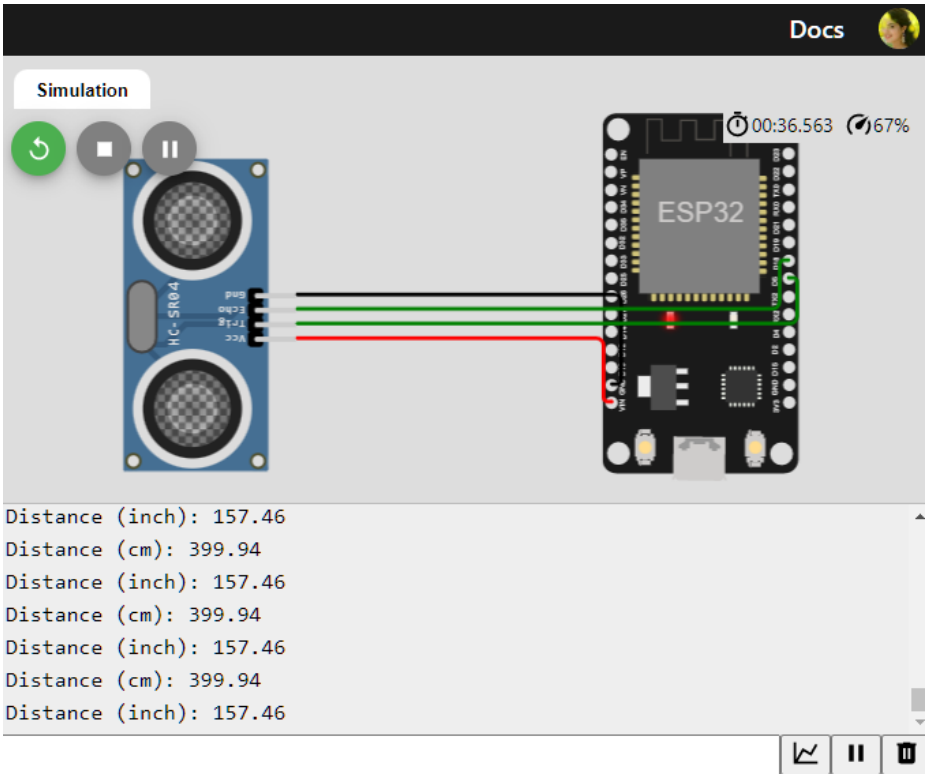
```
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>

WiFiClient wificlient:


#define ORG "tubusr"
#define DEVICE_TYPE "Evangs151"
#define DEVICE_ID "trainingid"
#define TOKEN "vqHfrv0*Jf3RB5hcJ8"
#define speed 0.034


char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/fmt/json";
char topic[] = "iot-2/cmd/home/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
```

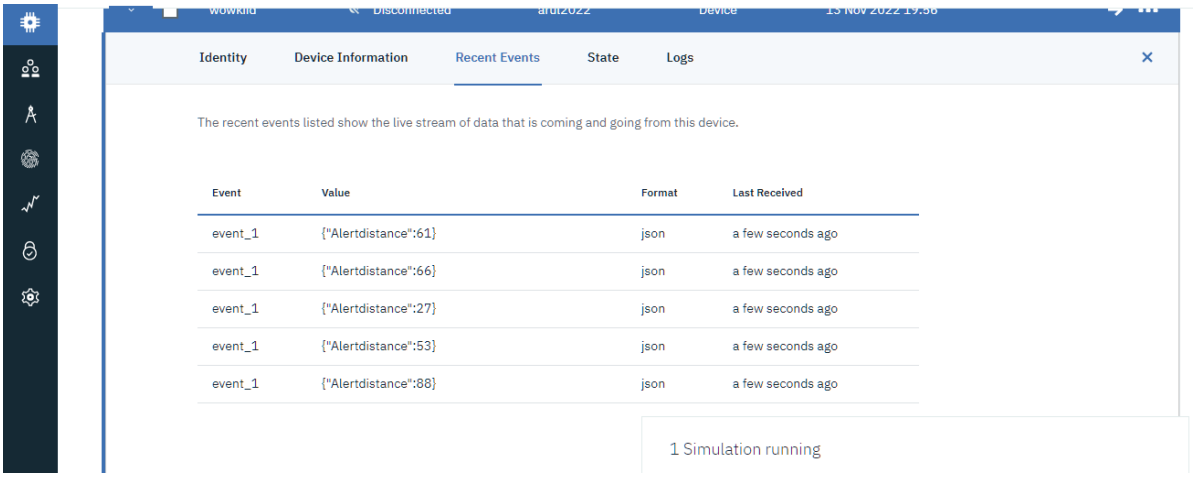
```
PubSubClient client(server, 1883, wifiClient);
void publishData();

const int trigpin=5;
const int echopin=18;
String command;
String data="";

long duration;
int dist;

void setup()
{
 Serial.begin(115200);
 pinMode(trigpin, OUTPUT);
 pinMode(echopin, INPUT);
 wifiConnect();
 mqttConnect();
}

void loop() {

 publishData();
 delay(500);
if (!client.loop()) {
 mqttConnect();
 }
}
void wifiConnect() {
 Serial.print("Connecting to "); Serial.print("Wifi");
 WiFi.begin("Wokwi-GUEST", "", 6);
```

```
 while (WiFi.status() != WL_CONNECTED) {
  delay(500);
  Serial.print(".");
}
 Serial.print("WiFi connected, IP address: "); Serial.println(WiFi.localIP());
}
void mqttConnect() {
 if (!client.connected()) {
  Serial.print("Reconnecting MQTT client to "); Serial.println(server);
 while (!client.connect(clientId, authMethod, token)) {
  Serial.print(".");
  delay(1000);
}
  initManagedDevice();
  Serial.println();
 }
}
void initManagedDevice() {
 if (client.subscribe(topic)) {
  Serial.println(client.subscribe(topic));
  Serial.println("subscribe to cmd OK");
} else {
   Serial.println("subscribe to cmd FAILED");
 }
}
void publishData()
{
 digitalWrite(trigpin,LOW);
 digitalWrite(trigpin,HIGH);
 delayMicroseconds(10);
 digitalWrite(trigpin,LOW);
```

```
 duration=pulseIn(echopin,HIGH);
 dist=duration*speed/2;
if(dist<100){
  DynamicJsonDocument doc(1024);
  String payload;
  doc["AlertDistance:"]=dist;
  serializeJson(doc, payload);
  delay(3000);
  Serial.print("\n");
  Serial.print("Sending payload: ");
  Serial.println(payload);
  if (client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish OK");
} else {
  Serial.println("Publish FAILED");
  }
 }
```

}




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
event_1
{"Alertdistance":61}
json
a few seconds ago
event_1
{"Alertdistance":66}
json
a few seconds ago
event_1
{"Alertdistance":27}
json
a few seconds ago
event_1
{"Alertdistance":53}
json
a few seconds ago
event_1
{"Alertdistance":88}
json
a few seconds ago
1 Simulation running