ASSIGNMENT-4

DISTANCE DETECTION USING ULTRASONIC SENSOR

Date	28 October 2022
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Maximum Marks	2 Marks

Question:

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 centimeters it should send "alert" to IBM cloud and display in device recent events

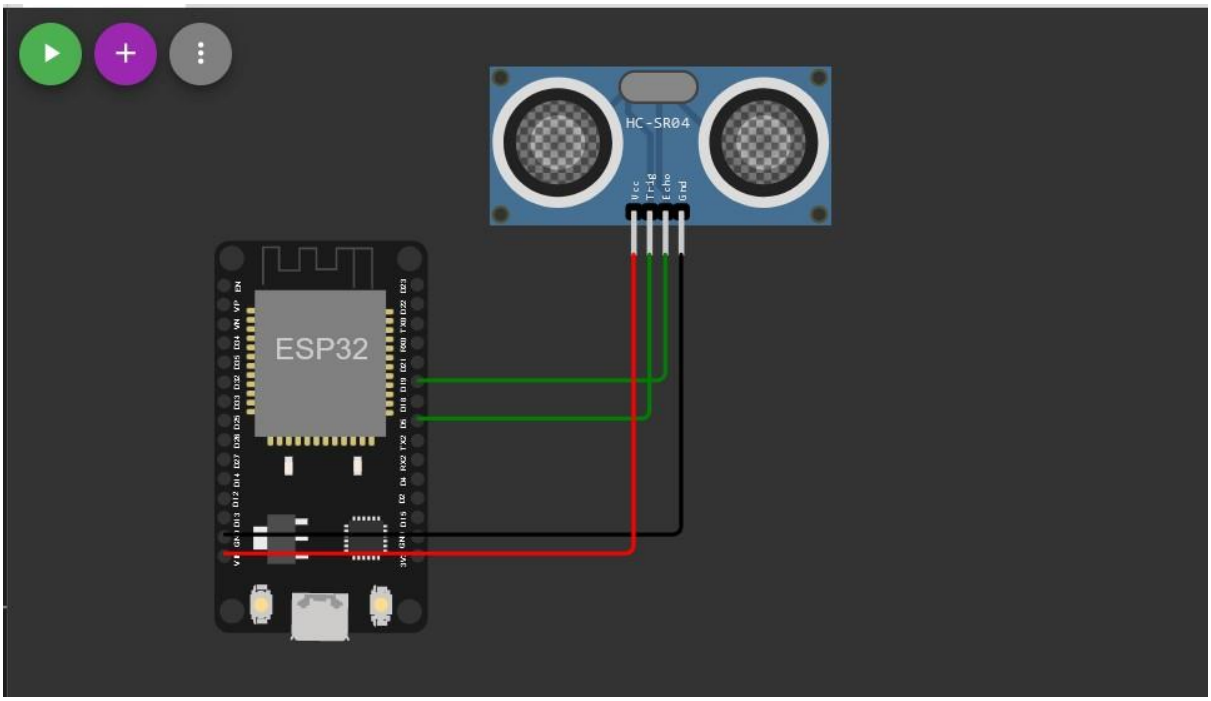
Code:

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

WiFiClient wifiClient;

#define ORG "mb5cgm"
#define DEVICE_TYPE "NodeMCU"
#define DEVICE_ID "12345"
#define TOKEN "12345678"
#define speed 0.034

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/status1/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;
```

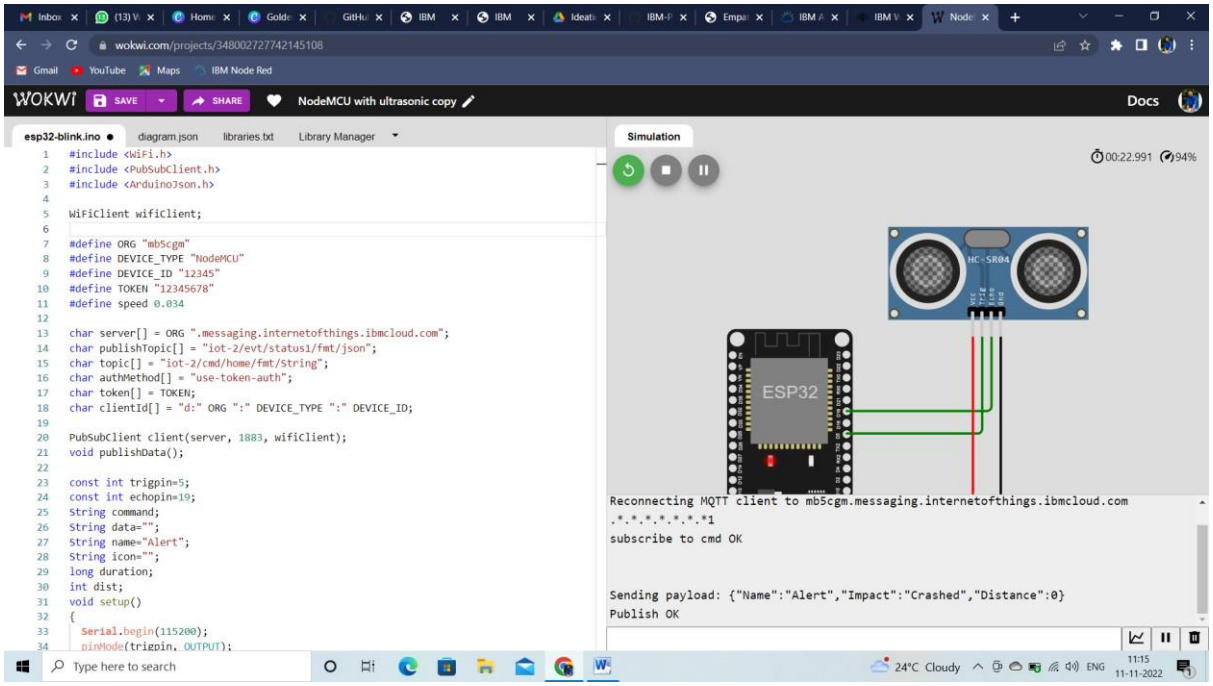
```
PubSubClient client(server, 1883, wifiClient); void
publishData();

const int trigpin=5;
const int echopin=19;
String command;
String data="";
String name="Alert";
String icon=""; 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(".");
Serial.print("*");
      delay(1000);
    }
    initManagedDevice();
    Serial.println();
```

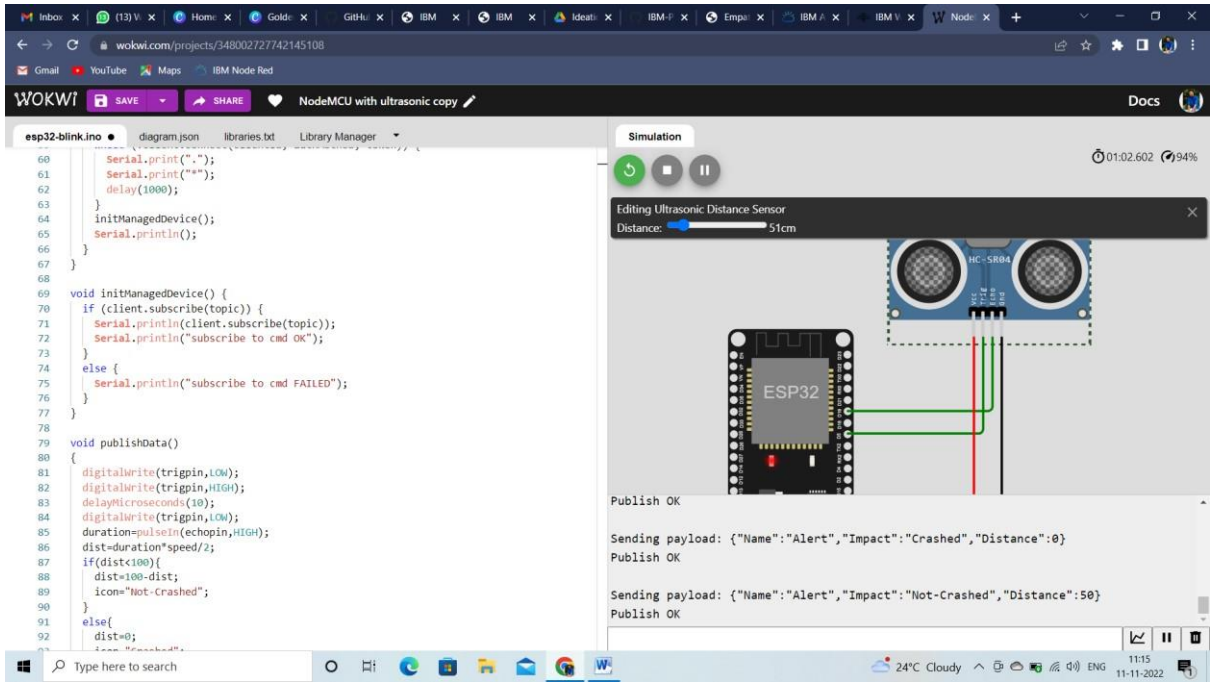
```
  }
}

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){     dist=100-dist;
    icon="Not-Crashed";
  }
else{
    dist=0;
icon="Crashed";
  }
  DynamicJsonDocument doc(1024);
  String payload;
doc["Name"]=name;
doc["Impact"]=icon;
doc["Distance"]=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");
  }
}
```

DIAGRAM:

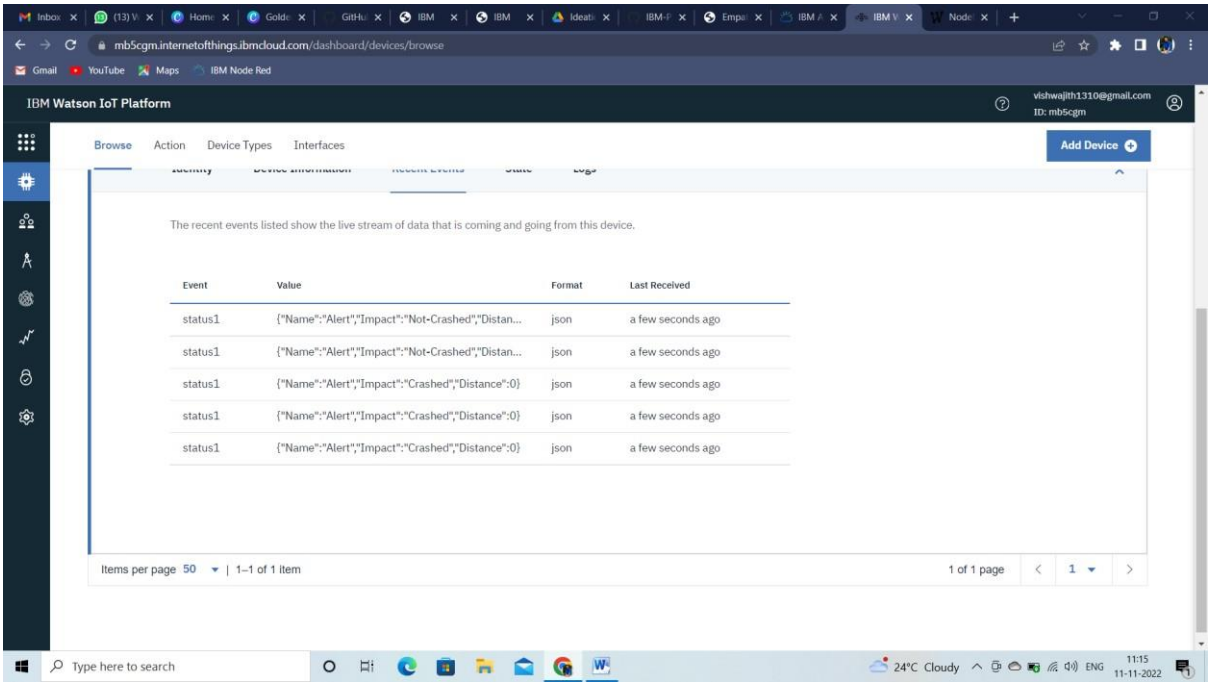


OUTPUT:





Data uploaded to Iot Watson Platform



https://wokwi.com/projects/348002727742145108