Assignment -4

WokwiProgramming

Assignment Date	31October 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.

PROGRAM

```
#include<WiFi.h>
#include<PubSubClient.h>
voidcallback(char* subscribetopic, byte* payload, unsignedint
payloadLength);
//-------credentials of IBM Accounts------
#define ORG "rv07c6"//IBM ORGANITION ID
#define DEVICE_TYPE "distance_hcsr04"//Device type mentioned in ibmwatson IOT
#define DEVICE_ID "6789"//Device ID mentioned in ibmwatson IOT Platform
#define TOKEN "w_mwV+5NZn*W7Xt)qA"//Token
String data3;
charserver[] = ORG ".messaging.internetofthings.ibmcloud.com";
charpublishTopic[] = "iot-2/evt/Data/fmt/json";
charsubscribetopic[] = "iot-2/cmd/test/fmt/String";
charauthMethod[] = "use-token-auth";
chartoken[] = TOKEN;
charclientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
WiFiClientwifiClient;
PubSubClientclient(server, 1883, callback ,wifiClient);
constinttrigPin = 5;
constintechoPin = 18;
#define SOUND_SPEED 0.034
long duration;
float distance;
voidsetup()
{
Serial.begin(115200);
pinMode(trigPin, OUTPUT);
pinMode(echoPin, INPUT);
wificonnect();
```

```
mqttconnect();
}
voidloop()
{
digitalWrite(trigPin, LOW);
delayMicroseconds(2);
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW);
duration = pulseIn(echoPin, HIGH);
distance = random(200);
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);
}
voidPublishData(floatdist) {
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");
}
}
voidmqttconnect() {
if(!client.connected()) {
Serial.print("Reconnecting client to ");
Serial.println(server);
while (!!!client.connect(clientId, authMethod, token)) {
Serial.print(".");
delay(500);
}
initManagedDevice();
```

```
Serial.println();
}
}
voidwificonnect()
{
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());
}
voidinitManagedDevice() {
if (client.subscribe(subscribetopic)) {
Serial.println((subscribetopic));
Serial.println("subscribe to cmd OK");
} else {
Serial.println("subscribe to cmd FAILED");
}
}
voidcallback(char* subscribetopic, byte* payload, unsignedintpayloadLength)
{
Serial.print("callback invoked for topic: ");
Serial.println(subscribetopic);
for (inti = 0; i<payloadLength; i++) {
//Serial.print((char)payload[i]);
data3 += (char)payload[i];
}
Serial.println("data: "+ data3);
data3="";
}
```

JSONCODE:

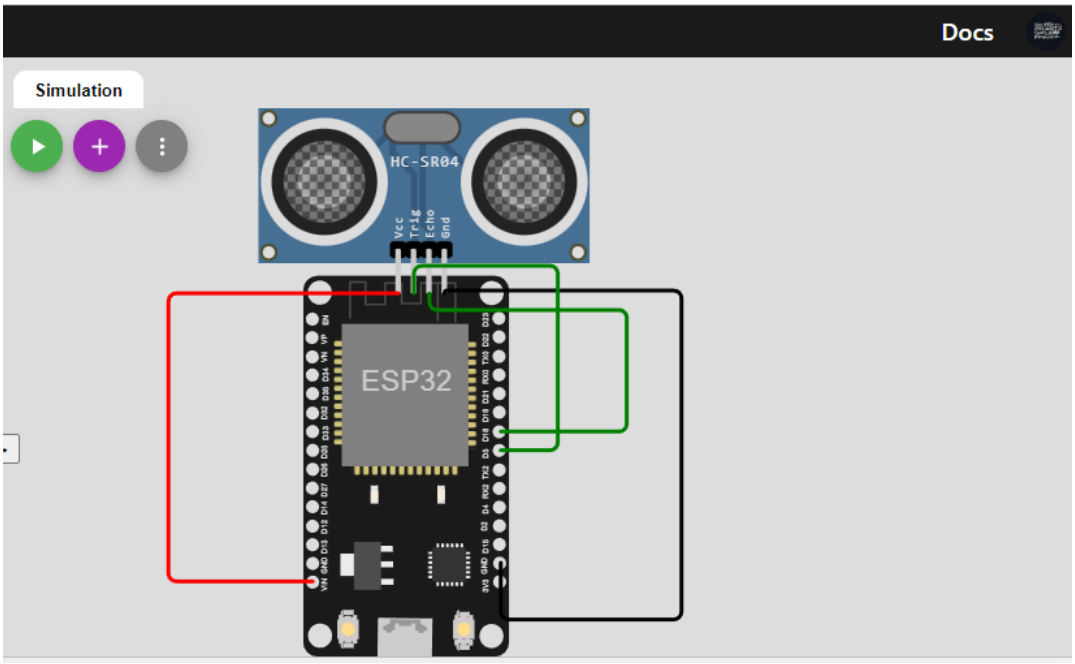
WOKWI SAVE SHARE

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

```
{
  "version": 1,
  "author": "K. Annapooraneshwari",
  "editor": "wokwi",
  "parts": [
    { "type": "wokwi-esp32-devkit-v1", "id": "esp", "top": 56, "left": -13.34, "attrs": {} },
    { "type": "wokwi-hc-sr04", "id": "ultrasonic1", "top": -27.7, "left": -36.17, "attrs": {} }
  ],
  "connections": [
    [ "esp:TX0", "$serialMonitor:RX", "", [] ],
    [ "esp:RX0", "$serialMonitor:TX", "", [] ],
    [ "ultrasonic1:GND", "esp:GND.1", "black", [ "v-1.43", "h121.22", "v168.67", "h-14" ] ],
    [ "esp:VIN", "ultrasonic1:VCC", "red", [ "h-73.83", "v-173.8" ] ],
    [ "ultrasonic1:ECHO", "esp:D18", "green", [ "v8.57", "h101.11", "v88" ] ],
    [ "esp:D5", "ultrasonic1:TRIG", "green", [ "h29.21", "v-94.6", "h-78" ] ]
  ]
}
```

sketch.ino - Wok....html

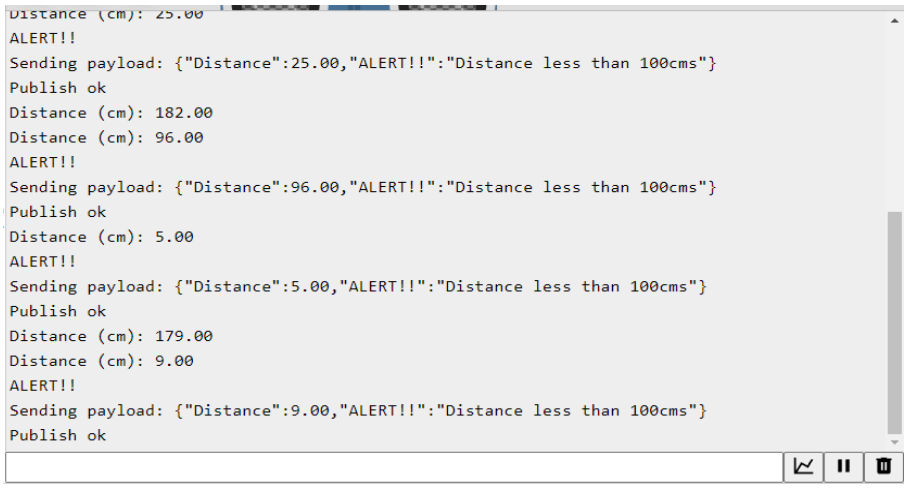
CIRCUIT DIAGRAM:



WOKWI URL:

https://wokwi.com/projects/347009925106369108

WOKWI OUTPUT:



IBM CLOUD OUTPUT: