Assignment -4
Ultrasonic Sensor in Wokwi

Assignment Date	26 October 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:

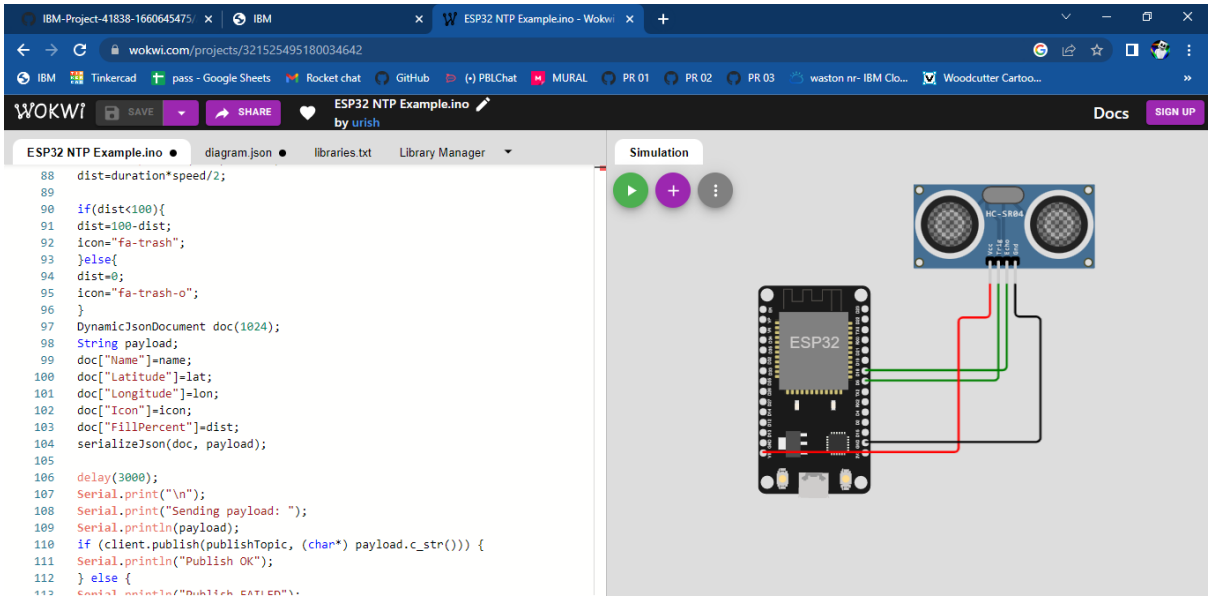
```
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>

WiFiClient wifiClient;

#define ORG "kr9fjo"
 #define DEVICE_TYPE "TestDeviceType"
 #define DEVICE_ID "12345"
#define TOKEN "VJsSC148dk1dCN3UqS" #define speed 0.034

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";

char publishTopic[] = "iot-2/evt/abcd_1/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="";
String lat="14.167589";
String lon="80.248510";
String name="point2";
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(".");
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="fa-trash";
}else{
dist=0;
icon="fa-trash-o";
}
DynamicJsonDocument doc(1024);
String payload;
doc["Name"]=name;
doc["Latitude"]=lat;
doc["Longitude"]=lon;
doc["Icon"]=icon;
doc["FillPercent"]=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");
}
}
```

OUTPUT:


IBM-Project-41838-1660645475/
IBM
ESP32 NTP Example.ino - Wokwi
wokwi.com/projects/321525495180034642
IBM
Tinkercad
pass - Google Sheets
Rocket chat
GitHub
(+) PBLChat
MURAL
PR 01
PR 02
PR 03
waston nr- IBM Clo...
Woodcutter Cartoo...
WOKWI
SAVE
SHARE
ESP32 NTP Example.ino
by urish
Docs
SIGN UP
ESP32 NTP Example.ino
diagram.json
libraries.txt
Library Manager
Simulation
HC-SR04
ESP32
88 dist=duration*speed/2;
89
90 if(dist<100){
91 dist=100-dist;
92 icon="fa-trash";
93 }else{
94 dist=0;
95 icon="fa-trash-o";
96 }
97 DynamicJsonDocument doc(1024);
98 String payload;
99 doc["Name"]=name;
100 doc["Latitude"]=lat;
101 doc["Longitude"]=lon;
102 doc["Icon"]=icon;
103 doc["FillPercent"]=dist;
104 serializeJson(doc, payload);
105
106 delay(3000);
107 Serial.print("\n");
108 Serial.print("Sending payload: ");
109 Serial.println(payload);
110 if (client.publish(publishTopic, (char*) payload.c_str())) {
111 Serial.println("Publish OK");
112 } else {