Assignment -4

WOWKI SIMULATION

Project name	SmartFarmer - IoT Enabled Smart Farming Application
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Student Roll Number	950919106007
Maximum Marks	2 Marks

Question-1:

Write a code and make a connection in WOKWI for ultrasonic sensor. Whenever distance is less than 100 , send “alert” to IBM cloud and display in device recent events.

PROGRAM

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient;
String data3;
#define ORG "b4hkg6"
#define DEVICE_TYPE "b11m3edevicetype" #define
DEVICE_ID "b1m3edeviceid"
#define TOKEN "Ao?yFfGVDA7dcv-KyQ"
#define speed 0.034  #define led 14 char server[] = ORG
".messaging.internetofthings.ibmcloud.com"; char publishTopic[] =
"iot-2/evt/Arya/fmt/json"; char topic[] = "iot-
2/cmd/led/fmt/String";   char authMethod[] = "use-token-auth"; char
token[] = TOKEN;
charclientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClientclient(server, 1883, wifiClient);


constinttrigpin=5; const
intechopin=18;
String command;
String data="";

long duration; float dist;
```

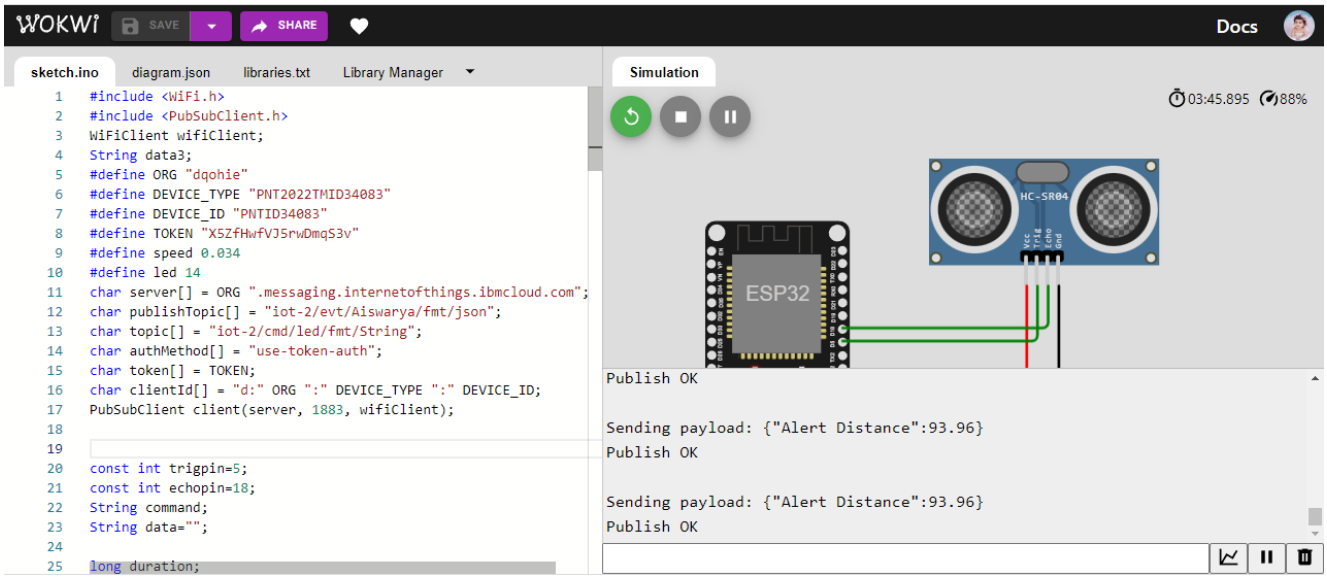
```
void setup()
{
Serial.begin(115200);
pinMode(led,            OUTPUT);
pinMode(trigpin,        OUTPUT);
pinMode(echopin,          INPUT);
wifiConnect();   mqttConnect();
}

void loop() {   boolisNearby
= dist< 100;
digitalWrite(led, isNearby);

publishData();
delay(500);

if (!client.loop()) {     mqttConnect();
  }
}

voidwifiConnect() {
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());
}

voidmqttConnect() {   if (!client.connected())
{
Serial.print("Reconnecting MQTT client to "); Serial.println(server);
while (!client.connect(clientId, authMethod, token)) {       Serial.print(".");
delay(500);
   }
initManagedDevice();
Serial.println();
  }
}
```

```
voidinitManagedDevice() {
if (client.subscribe(topic)) {
//
Serial.println(client.subscribe
(topic));
Serial.println("IBM subscribe to cmd OK");
 } else {
Serial.println("subscribe to cmd FAILED");
 }
}
voidpublishData()
{
digitalWrite(trigpin,LOW);
digitalWrite(trigpin,HIGH);
delayMicroseconds(10);
digitalWrite(trigpin,LOW);
duration=pulseIn(echopin,HIGH);
dist=duration*speed/2;   if(dist<100){
String payload = "{\"Alert Distance\":";
payload += dist;     payload += "}";

Serial.print("\n");
Serial.print("Sending payload: ");     Serial.println(payload);
if (client.publish(publishTopic, (char*) payload.c_str())) {
Serial.println("Publish OK");
   }

 }
if(dist>100){
   String payload = "{\"Distance\":";     payload
+= dist;     payload += "}";

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");
   }

 }
```

}

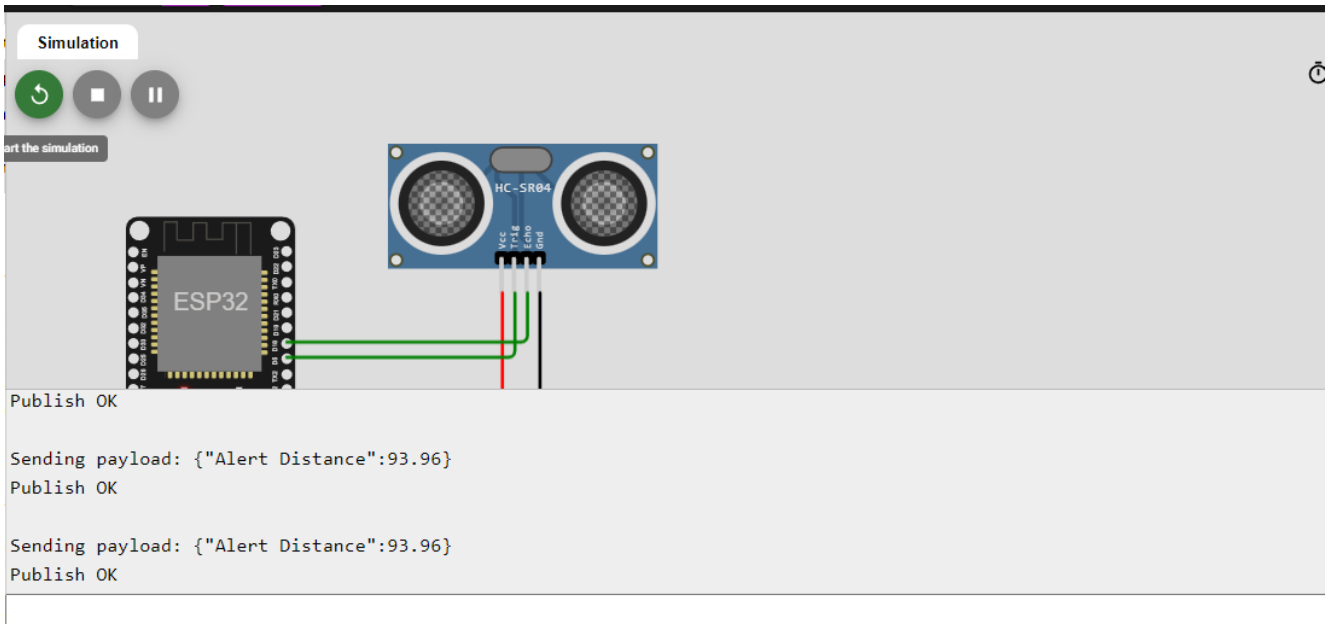
OUTPUT:

WOKWI SIMULATION

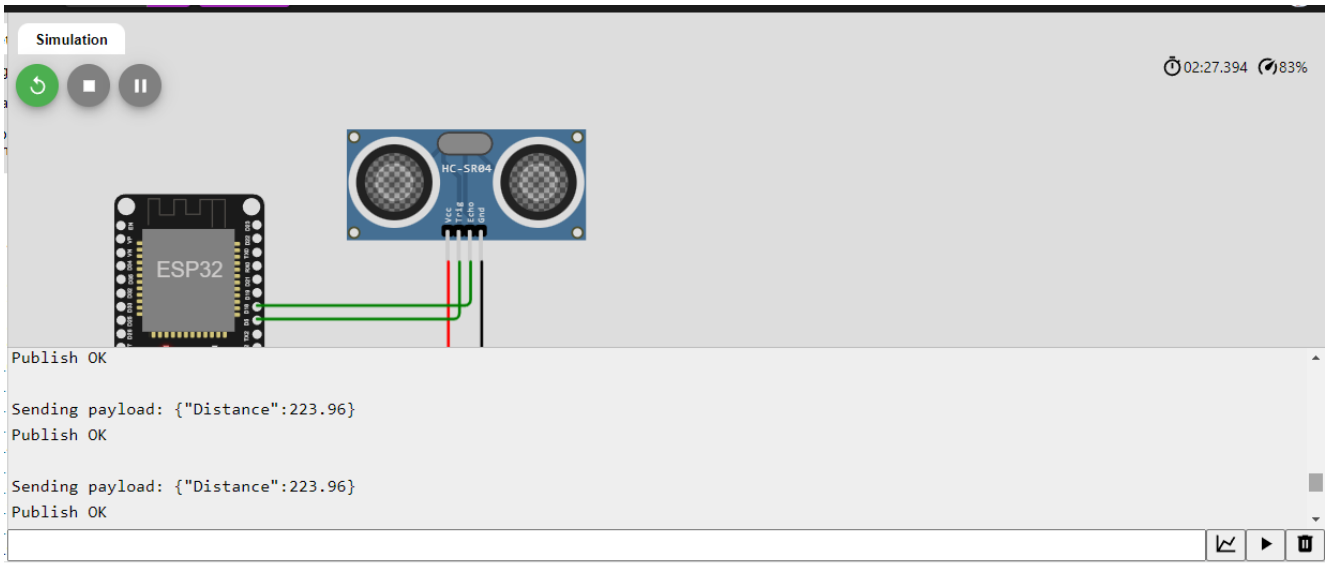



```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "dqohie"
#define DEVICE_TYPE "PNT2022TMID34083"
#define DEVICE_ID "PNTID34083"
#define TOKEN "X5ZfHwfVJ5rwDmqS3v"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Aiswarya/fmt/json";
char topic[] = "iot-2/cmd/led/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);

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

long duration;
```

When distance<100:



When distance>100:



IBM CLOUD OUTPUT