Assignment-4
Question-1:

Write code and connections in wowki for the ultrasonic sensor. Whenever the distance is less than 100cms sent "alert" to IBM cloud and display in device recent events.

Code:

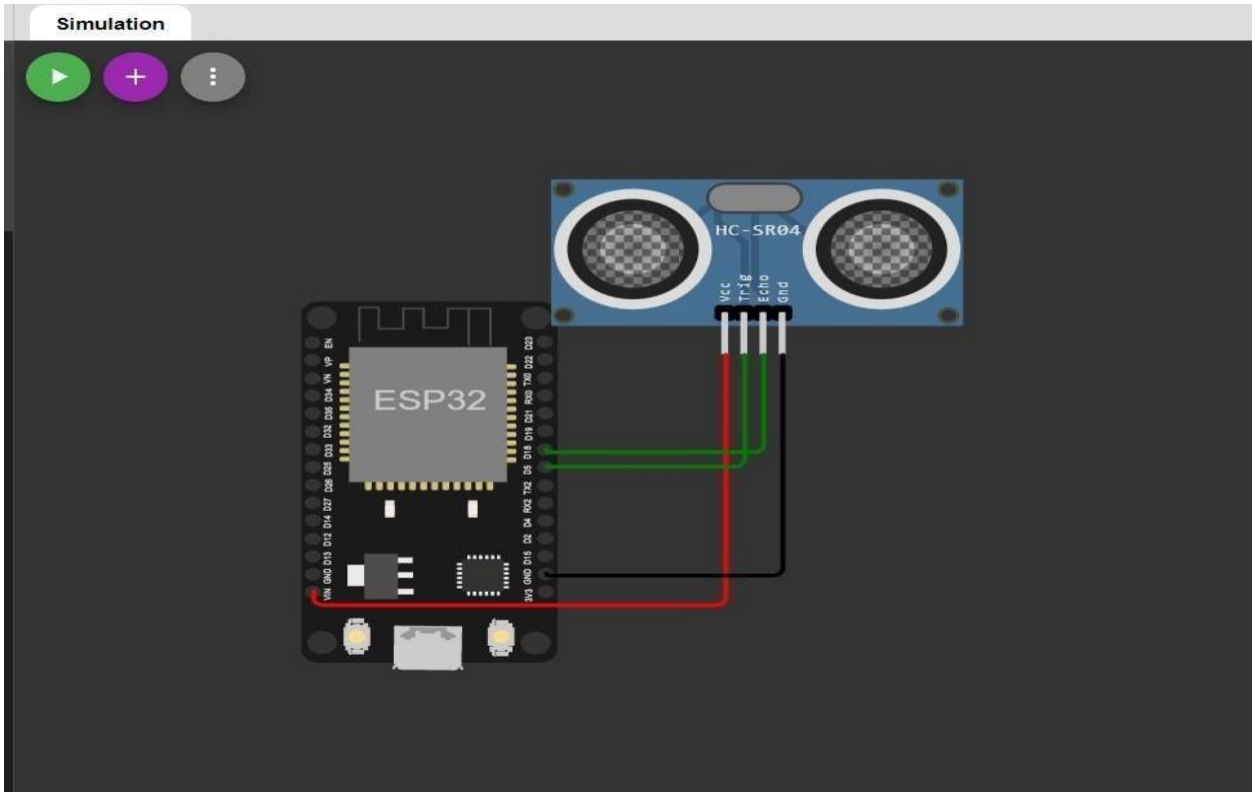
```
#include  <WiFi.h>

#include <PubSubClient.h>

#include <ArduinoJson.h>

WiFiClient wifiClient; String data3;

#define ORG "4o5bpf"

#define DEVICE_TYPE "TestDeviceType"

#define DEVICE_ID "28122001"

#define TOKEN "rlerLKxv&K2!a0FFQC"

#define speed 0.034 #define led 14 char server[] = ORG

".messaging.internetofthings.ibmcloud.com"; char publishTopic[]

= "iot-2/evt/shreedharen/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; float

dist; void setup()

{

Serial.begin(115200);

pinMode(led, OUTPUT);

pinMode(trigpin, OUTPUT);

pinMode(echopin, INPUT);

wifiConnect(); mqttConnect();

} void loop() { bool isNearby

= dist < 100; digitalWrite(led,

isNearby); 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
```

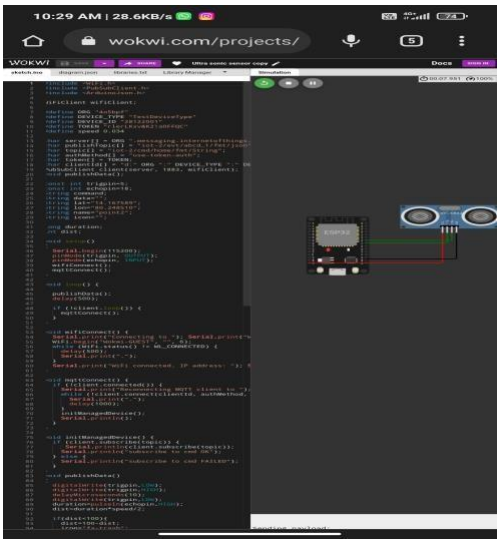
```
(!client.connected()) {
Serial.print("Reconnecting MQTT client to ");
Serial.println(server); while (!client.connect(clientId, authMethod,
token)) { Serial.print("."); delay(500); } initManagedDevice();
Serial.println(); } } void initManagedDevice() { if
(client.subscribe(topic)) {
 // Serial.println(client.subscribe(topic));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

Connections:



Output:



Output:(IBM Cloud)