

ASSIGNMENT-4

- 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

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CODE

```
•  
#include <WiFi.h>  
//#include <PubSubClient.h>  
void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);  
#define ORG "46d2e1"//IBM ORGANITION ID  
#define DEVICE_TYPE "87654321"//Device type mentioned in ibm watson IOT  
#define DEVICE_ID "12345678"//Device ID mentioned in ibm watson IOT  
#define TOKEN "123123123" //Token String data3;  
char server[] = ORG ".messaging.internetofthings.ibmcloud.c om";  
char publishTopic[] = "iot- 2/evt/Data/fmt/json";  
char subscribetopic[] = "iot- 2/cmd/test/fmt/String";  
char authMethod[] = "use-token-auth"; char token[] = TOKEN;  
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;  
WiFiClient wifiClient;  
//PubSubClient client(server, 1883, callback ,wifiClient);  
const int trigPin = 5; const int echoPin = 18;  
const int ledpin= 12;
```

```
#define SOUND_SPEED 0.034
long duration;
float distance; void setup() {
Serial.begin(115200); pinMode(trigPin, OUTPUT);
pinMode(ledpin, OUTPUT);
pinMode(echoPin, INPUT);
//wificonnect();
//mqttconnect();
}
void loop()
{
digitalWrite(trigPin, LOW); delayMicroseconds(2); digitalWrite(trigPin, HIGH);
    delayMicroseconds(10); digitalWrite(trigPin, LOW);
duration = pulseIn(echoPin, HIGH);
distance = duration * SOUND_SPEED/2;
Serial.print("Distance (cm): "); Serial.println(distance);
if(distance<100)
```

```
{
  digitalWrite(ledpin, HIGH);
  delay(1000);
  Serial.println("ALERT!!"); delay(1000); PublishData(distance); delay(1000);
  /*if (!client.loop()) { mqttconnect();
  }
  */}
else
{
  digitalWrite(ledpin, LOW);
  delay(1000);
}
delay(1000);
}

void PublishData(float dist) {
  //mqttconnect();
  String payload = "{\\"Distance\":"; payload += dist;
  payload += ",\\"ALERT!!\":"\\"Distance less than 100cms\\"";
  payload += "}"; Serial.print("Sending payload: "); Serial.println(payload);
}
```

OUTPUT:

The screenshot displays the Wokwi IoT simulator interface. At the top, the browser address bar shows the project URL: `wokwi.com/projects/347659683499082322`. The Wokwi header includes a 'Docs' link and a user profile icon. The main workspace shows a circuit diagram with an ESP32 microcontroller, an ultrasonic sensor, and an LED. A control panel on the left includes a 'Simulation' tab, a 'diag' button, and a 'lib' button. A 'Distance' slider is set to 61cm. The console output shows the following sequence of events:

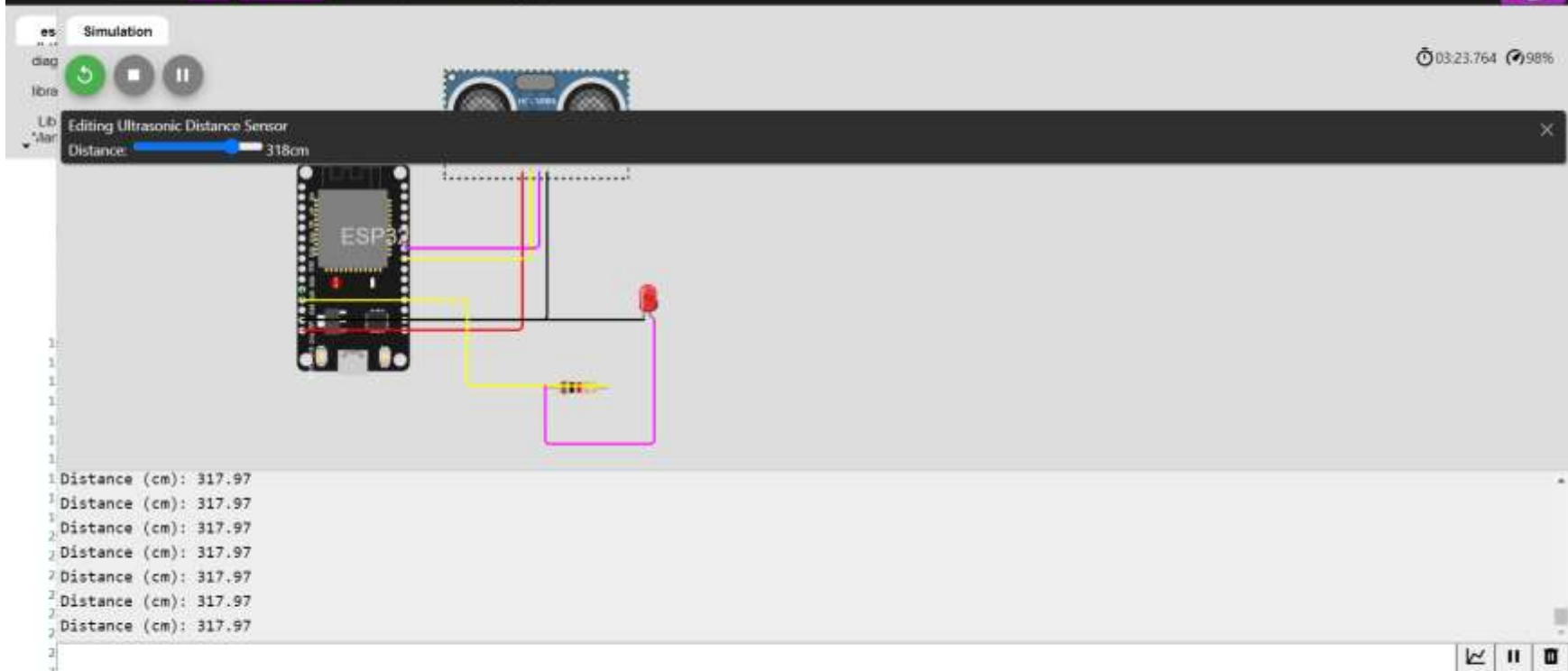
```
1 Distance (cm): 317.97
1 Distance (cm): 317.97
1 Distance (cm): 317.97
2 Distance (cm): 317.97
2 Distance (cm): 94.94
2 ALERT!!
2 Sending payload: {"Distance":94.94,"ALERT!!":"Distance less than 100cms"}
```

The bottom of the screen shows a Windows taskbar with various application icons and a system tray displaying the date and time: 16:16, 07-11-2022.

Simulation

Distance: 318cm

Distance (cm): 317.97
Distance (cm): 317.97
Distance (cm): 317.97
Distance (cm): 317.97
Distance (cm): 317.97
Distance (cm): 317.97
Distance (cm): 317.97



wokwi link:

<https://wokwi.com/projects/34765968349908232>

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