

## ASSIGNMENT - 4

Date	19 September 2022
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Maximum Marks	2 Marks

### QUESTION:

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.

### SOLUTION:

Link: <https://wokwi.com/projects/346784825273746003>

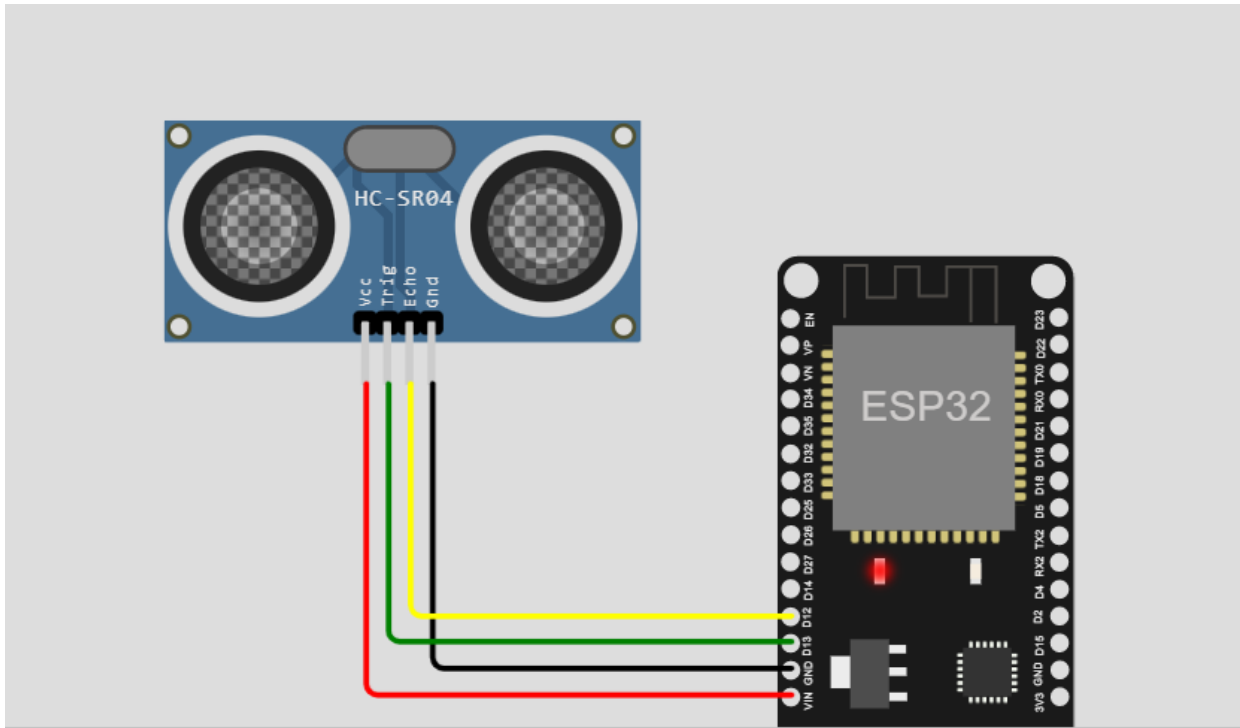
The screenshot displays the Wokwi web interface for simulating an Arduino Uno project. On the left, the 'sketch.ino' file is open, showing the following code:

```
1 #include <WiFi.h> //library for wifi
2 #include <PubSubClient.h> //library for MQTT
3 #define TrigPIN 15
4 #define EchoPIN 4
5 #define MINDIST 100
6
7
8
9 void callback(char* topic, byte* payload, unsigned int payloadLength);
10
11 //-----credentials of IBM Accounts-----
12
13 #define ORG "4qb92" //IBM ORGANIZATION ID
14 #define DEVICE_TYPE "rasperrypi" //Device type mentioned in ibm watson IOT Platform
15 #define DEVICE_ID "12345" //Device ID mentioned in ibm watson IOT Platform
16 #define TOKEN "123456789" //Token
17 String data3;
18 float h, t;
19
20
21 //----- Customise the above values -----
22 char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; // Server Name
23 char publishTopic[] = "iot-2/evt/Data/fmt/json"; // topic name and type of event perform a
24 char subscribeTopic[] = "iot-2/cmd/command/fmt/string"; // cmd REPRESENT command type AND
25 char authMethod[] = "use-token-auth"; // authentication method
26 char token[] = TOKEN;
27 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID; //client id
28
29
30 //-----
31 WiFiClient wifiClient; // creating the instance for wifiClient
32 PubSubClient client(server, 1883, callback, wifiClient); //calling the predefined client
33
34
35 void setup() // configuring the ESP32
```

On the right, the simulation output window shows the following messages:

```
Sending payload: {"MESSAGE":"ALERT"}
Publish ok
Sending payload: {"MESSAGE":"ALERT"}
Publish ok
Sending payload: {"MESSAGE":"ALERT"}
Publish ok
Reconnecting client to 4qb92.messaging.internetofthings.ibmcloud.com
```

The simulation interface also shows a visual representation of the hardware components: an Arduino Uno, an HC-SR04 ultrasonic sensor, and an ESP32 module, connected by wires. The top bar of the interface includes a 'WOKWI' logo, 'SAVE' and 'SHARE' buttons, and a 'Docs' link.



## OUTPUT:

IBM Watson IoT Platform

4qbk92.internetofthings.ibmcloud.com/dashboard/devices/browse

shakinscha@student.tcu.edu ID: 4qbk92

Search by Device ID

Device Simulator

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
12345	Connected	rasperrypi	Device	21 Oct 2022 22:13	

Identity | Device Information | **Recent Events** | State | Logs

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
Data	{"MESSAGE":"ALERT"}	json	a few seconds ago
Data	{"MESSAGE":"ALERT"}	json	a few seconds ago
Data	{"MESSAGE":"ALERT"}	json	a few seconds ago
Data	{"MESSAGE":"ALERT"}	json	a few seconds ago
Data	{"MESSAGE":"ALERT"}	json	a few seconds ago

0 Simulations running