

Publish Data to the IBM Cloud

Team ID	PNT2022TMID52802
Project Name	Hazardous Area Monitoring for Industrial Plant powered by IoT

WOKWI Simulation using ESP32 and Ultrasonic Sensor:

The screenshot displays the WOKWI simulation interface. On the left, the 'sketch.ino' file is open, showing C++ code for an ESP32 microcontroller. The code includes libraries for WiFi and MQTT, defines GPIO pins for an ultrasonic sensor, and sets up an MQTT client to publish distance data to the IBM Watson IoT Platform. The right side shows the 'Simulation' window with a visual representation of the ESP32 and the HC-SR04 ultrasonic sensor. Below the simulation, a console window shows the output of the program, including the distance measured in centimeters and the JSON payload sent via MQTT.

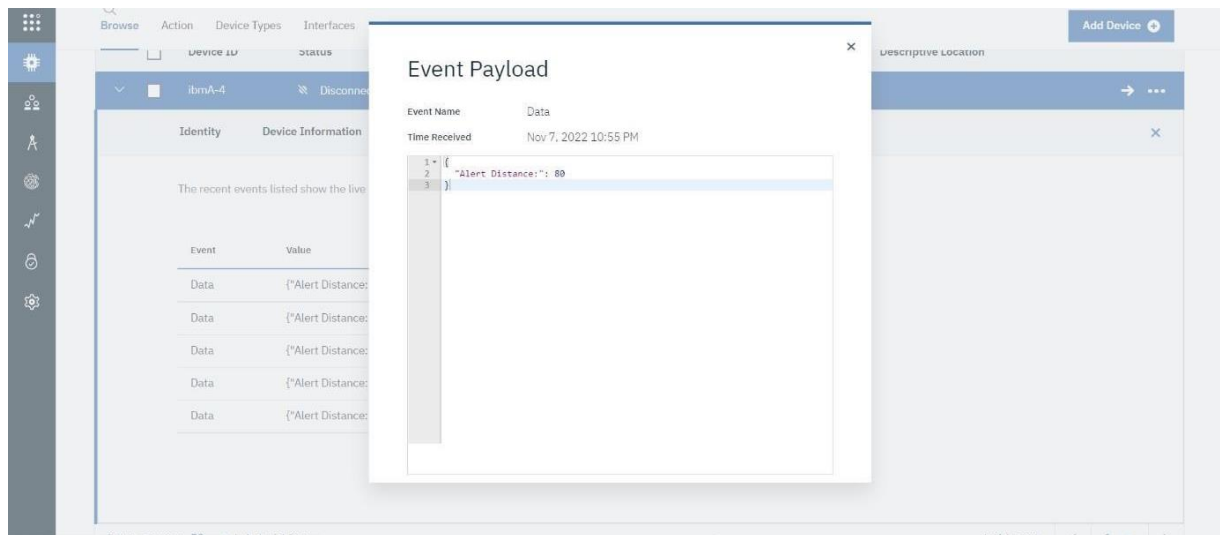
```
1 //----- IBM ASSIGNMENT-4 PREETHI GOVINDARAJ (312319106123)-----//
2 #include <WiFi.h> //library for wifi
3 #include <PubSubClient.h> //library for MQTT
4
5 #define ECHO_GPIO 12
6 #define TRIGGER_GPIO 13
7 #define MAX_DISTANCE_CM 100 // Maximum of 0.1 meters
8 #include "Ultrasonic.h"
9
10 Ultrasonic ultrasonic(13, 12);
11 int distance;
12
13 void callback(char* topic, byte* payload, unsigned int payloadLength);
14
15 //-----credentials of IBM Accounts-----
16
17 #define ORG "zfc7n" //IBM ORGANIZATION ID
18 #define DEVICE_TYPE "ESP32_Controller" //Device type mentioned in ibm watson IOT Platform
19 #define DEVICE_ID "ibmA-4" //Device ID mentioned in ibm watson IOT Platform
20 #define TOKEN "GRT14P*ZvcM4PB10ft" //Token
21 String data;
22 float h, t;
23
24 //----- Customise the above values -----
25 char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; // Server Name
26 char publishTopic[] = "iot-2/ext/Data/fmt/json"; // topic name and type of event perform
27 char subscribeTopic[] = "iot-2/cmd/command/fmt/String"; // cmd REPRESENT command type AND
28 char authMethod[] = "use-token-auth"; // authentication method
29 char token[] = TOKEN;
30 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID; //client id
31
32 //-----
33 WiFiClient wifiClient; // creating the instance for wifiClient
34 PubSubClient client(server, 1883, callback, wifiClient); //calling the modified client
```

Distance in Centimeters: 84
Sending payload: {"Alert Distance":84.00}
Publish ok
Distance in Centimeters: 35
Sending payload: {"Alert Distance":35.00}
Publish ok

IBM WATSON PLATFORM DEVICE-EVENT LOG:

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
ibmA-4	Connected	ESP32_Controller	Device	Nov 7, 2022 10:15 PM	
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	{"Alert Distance":76}	json	a few seconds ago		
Data	{"Alert Distance":80}	json	a few seconds ago		
Data	{"Alert Distance":73}	json	a few seconds ago		
Data	{"Alert Distance":69}	json	a few seconds ago		
Data	{"Alert Distance":68}	json	a few seconds ago		

IBM WATSON PLATFORM DEVICE-EVENT PAYLOAD:



IBM WATSON PLATFORM DEVICE-BOARD AND GRAPHICAL REPRESENTATION OF DATA FROM WOKWI SIMULATION:



