

WOWKI SIMULATION:

WOWKI - Wokwi Arduino and ESP32 Simulator

sketch.ino

```
1 #include <WiFi.h> // library for WiFi
2 #include <PubSubClient.h> // library for MQTT
3 #include <LiquidCrystal_I2C.h>
4 LiquidCrystal_I2C lcd(0x27, 20, 4);
5
6 //----- credentials of IBM Accounts -----
7
8 #define ORG "gghelu" // IBM organisation ID
9 #define DEVICE_TYPE "BMSHC" // Device type mentioned in the Watson IoT platform
10 #define DEVICE_ID "lbpjrc" // Device ID mentioned in the Watson IoT platform
11 #define TOKEN "slnu41t06-Pqj0rKXK" // Token
12
13 //----- customise above values -----
14
15 char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; // server name
16 char publishTopic[] = "iot-2/evt/data/fmt/json"; // topic name and type of event
17 char topic[] = "iot-2/cmd/led/fmt/String"; // cmd Represent type and command
18 char authMethod[] = "use-token-auth"; // authentication method
19 char token[] = TOKEN;
20 char clientId[] = "i-" ORG "-" DEVICE_TYPE "-" DEVICE_ID; //client id
21
22 //-----
23
24 WiFiClient wifiClient;
25 PubSubClient client(server, 1883, wifiClient); // creating instance for wificlient
26
27 #define ECHO_PIN 12
28 #define TRIG_PIN 13
29 float dist;
30
31 void setup()
32 {
33   Serial.begin(115200);
34   pinMode(LED_BUILTIN, OUTPUT);
35   pinMode(TRIG_PIN, OUTPUT);
36   pinMode(ECHO_PIN, INPUT);
37   //pin pin
38   pinMode(34, INPUT);
39
40   //led pins
41   pinMode(23, OUTPUT);
42   pinMode(2, OUTPUT);
43   pinMode(4, OUTPUT);
44   pinMode(15, OUTPUT);
45
46 }
```

Simulation

Connecting to Wifi

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```
47 lcd.init();
48 lcd.backlight();
49 lcd.setCursor(1, 0);
50 lcd.print("");
51 WiFiConnect();
52 mqttConnect();
53
54
55 float readCM()
56 {
57   digitalWrite(TRIG_PIN, LOW);
58   delayMicroseconds(2);
59   digitalWrite(TRIG_PIN, HIGH);
60   delayMicroseconds(100);
61   digitalWrite(TRIG_PIN, LOW);
62   int duration = pulseIn(ECHO_PIN, HIGH);
63   return duration * 0.034 / 2;
64 }
65
66 void loop()
67 {
68   lcd.clear();
69   publishData();
70   delay(1000);
71   if (!client.loop())
72   {
73     mqttConnect(); // function call to connect to IBM
74   }
75 }
76
77 //-----retrieving to cloud-----
78
79 void WiFiConnect()
80 {
81   Serial.print("Connecting to ");
82   Serial.print("WiFi");
83   WiFi.begin("Wokwi-GUEST", "", 0);
84   while (WiFi.status() != WL_CONNECTED)
85   {
86     delay(500);
87     Serial.print(".");
88   }
89 }
```

Simulation

Inches 157.5 cm 400.0

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https://wokwi.com/projects/349319600770384466

WOKWI

sketch.ino diagram.json libraries.txt Library Manager

```

101 }
102 Serial.print("WiFi connected, IP address: ");
103 Serial.println(WiFi.localIP());
104 }
105 void mqttConnect()
106 {
107   if (!client.connected())
108   {
109     Serial.println("Reconnecting MQTT client to ");
110     Serial.println(server);
111     while (!client.connect(clientId, authMethod, token))
112     {
113       Serial.print(".");
114       delay(500);
115     }
116     initManagedDevice();
117     Serial.println();
118   }
119 }
120 void initManagedDevice()
121 {
122   if (client.subscribe(topic))
123   {
124     Serial.println("IBH subscribe to cmd OK");
125   }
126   else
127   {
128     Serial.println("subscribe to cmd FAILED");
129   }
130 }
131 void publishData()
132 {
133   float cm = readcmCH();
134   if(digitalRead(34)) //pir motion detection
135   {
136     Serial.println("Motion Detected");
137     Serial.println("Lid Opened");
138     digitalWrite(15, HIGH);
139   }
140   if(digitalRead(34) == true)
141   {
142     if(cm <= 60) //Bin level detection

```

Simulation

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WOKWI

sketch.ino diagram.json libraries.txt Library Manager

```

137 digitalWrite(2, HIGH);
138 Serial.println("High Alert!!!,Trash bin is about to be full");
139 Serial.println("Lid Closed");
140 lcd.print("Full! Don't use");
141 delay(2000);
142 lcd.clear();
143 digitalWrite(4, LOW);
144 digitalWrite(23, LOW);
145 }
146 else if(cm > 60 && cm < 120)
147 {
148   digitalWrite(4, HIGH);
149   Serial.println("Warning!!,Trash is about to cross 50% of bin level");
150   digitalWrite(2, LOW);
151   digitalWrite(23, LOW);
152 }
153 }
154 else if(cm > 120)
155 {
156   digitalWrite(23, HIGH);
157   Serial.println("Bin is available");
158   digitalWrite(2, LOW);
159   digitalWrite(4, LOW);
160 }
161 delay(10000);
162 Serial.println("Lid Closed");
163 }
164 else
165 {
166   Serial.println("No motion detected");
167   digitalWrite(4, LOW);
168   digitalWrite(15, LOW);
169   digitalWrite(4, LOW);
170   digitalWrite(23, LOW);
171 }
172 }
173 }
174 }
175 }
176 }
177 }
178 digitalWrite(15, LOW);
179 }
180 }
181 }

```

Simulation

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