

Project Development Phase – Sprint 3

Date	12 Nov 2022
Team ID	PNT2022TMID18178
Project Name	Smart Waste Management for Metropolitan Cities

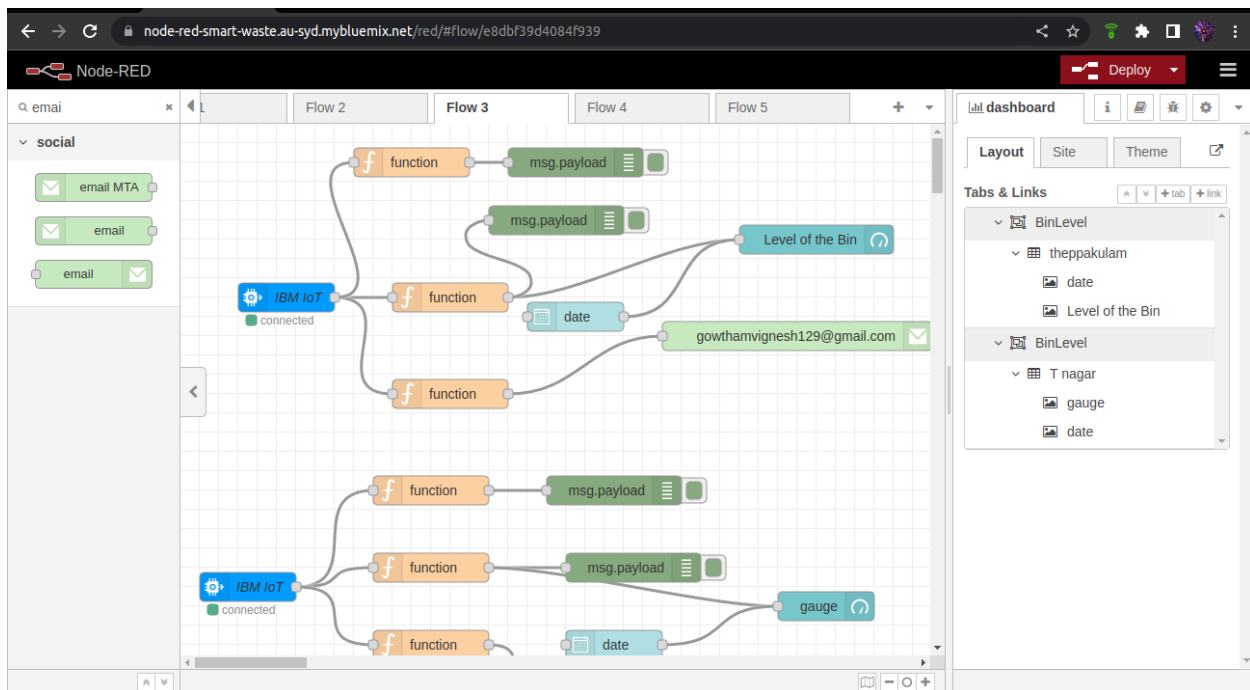
Node red :

IBM iot device is connected which returns values of the bin level based on sensor data .By using function node these data is modified based on need .

Operations performed:

-Mail sending when the bin is almost full .

-Date is attached and the bin level is indicated to the user using dashboard.



Wokwi of two IBM iot device are given as follow:

IOT device 1:Theppakulam area bin

WOKWI

SAVE SHARE

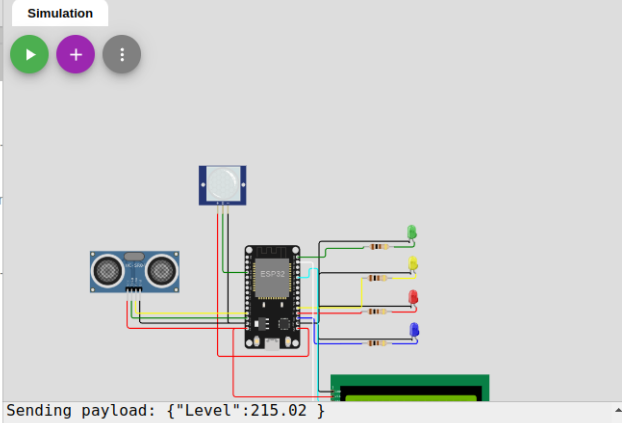
ESP32-IBMconnection[original] copy

Docs SIGN UP

esp32-blink.ino diagram.json libraries.txt Library Manager

```
1 #include <WiFi.h> // library for wifi
2 #include <PubSubClient.h> // library for MQTT
3 #include <LiquidCrystal_I2C.h>
4 #include <mjson.h>
5 LiquidCrystal_I2C lcd(0x27, 20, 4);
6
7 //----- credentials of IBM Accounts -----
8
9 #define ORG "dfqhgb" // IBM organisation id
10 #define DEVICE_TYPE "RaspberryPi" // Device type mer
11 #define DEVICE_ID "369" // Device ID mentioned in ibm
12 #define TOKEN "87654321" // Token
13
14 //----- customise above values -----
15
16 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
17 char publishTopic[] = "iot-2/evt/data/fmt/json";
18 char topic[] = "iot-2/cmd/led/fmt/String";
19 char authMethod[] = "use-token-auth";
20 char token[] = TOKEN;
21 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
22
23 //-----
24
25 WiFiClient wifiClient;
26 PubSubClient client(server, 1883, wifiClient);
27
28 #define ECHO_PIN 12
29 #define TRIG_PIN 13
30 float dist;
31 String data3;
```

Simulation



Sending payload: {"Level":215.02 }
Publish OK

Sending payload: {"Level":214.95 }
Reconnecting MQTT client to
dfqhgb.messaging.internetofthings.ibmcloud.com

IOT device 2:Tnagar area bin

WOKWI

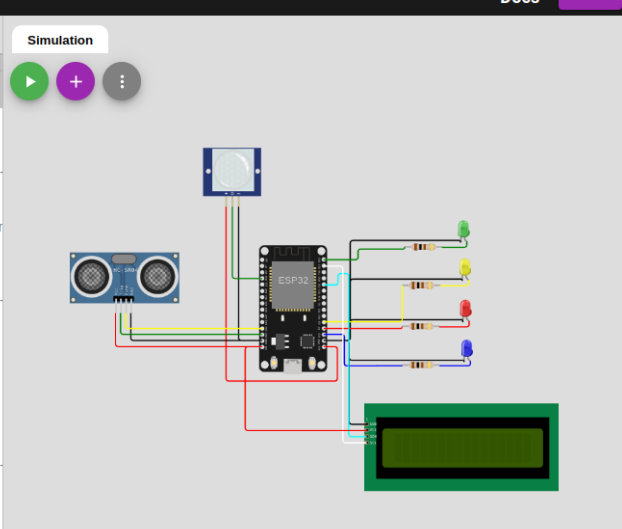
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2 #include <PubSubClient.h> // library for MQTT
3 #include <LiquidCrystal_I2C.h>
4 #include <mjson.h>
5 LiquidCrystal_I2C lcd(0x27, 20, 4);
6
7 //----- credentials of IBM Accounts -----
8
9 #define ORG "46kqz9" // IBM organisation id
10 #define DEVICE_TYPE "raspberrypi" // Device type mer
11 #define DEVICE_ID "123" // Device ID mentioned in ibm
12 #define TOKEN "12345678" // Token
13
14 //----- customise above values -----
15
16 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
17 char publishTopic[] = "iot-2/evt/data/fmt/json";
18 char topic[] = "iot-2/cmd/led/fmt/String";
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31 String data3;
```

Simulation



Cloud data received are given as follow:

IOT device 1 :cloud events

The screenshot displays the IBM Watson IoT Platform interface. On the left, a dark sidebar contains navigation icons for Boards, Devices, Members, Apps, Access Management, Usage, Security, and Settings. The 'Devices' section is active. The main panel shows a table of devices. The first device, ID 169, is 'Disconnected' and a 'RaspberryPi'. Below the table, the 'Recent Events' tab is selected, showing a live stream of data events. The events are listed in a table with columns: Event, Value, Format, and Last Received.

Event	Value	Format	Last Received
data	{"Level":214.96}	json	a few seconds ago
data	{"Level":215}	json	a few seconds ago
data	{"Level":214.98}	json	a few seconds ago
data	{"Level":214.96}	json	a few seconds ago
data	{"Level":214.96}	json	a minute ago

IOT device 2:cloud events

The screenshot shows the IBM Watson IoT Platform interface for a different user. The left sidebar is the same. The main panel shows a table of devices. The first device, ID 123, is 'Connected' and a 'raspberrypi'. Below the table, the 'Recent Events' tab is selected, showing a live stream of data events. The events are listed in a table with columns: Event, Value, Format, and Last Received.

Event	Value	Format	Last Received
data	{"Warning":169.97}	json	a few seconds ago
data	{"Warning":169.97}	json	a few seconds ago
data	{"Warning":170}	json	a few seconds ago

At the bottom of the interface, it says '0 Simulations running'.