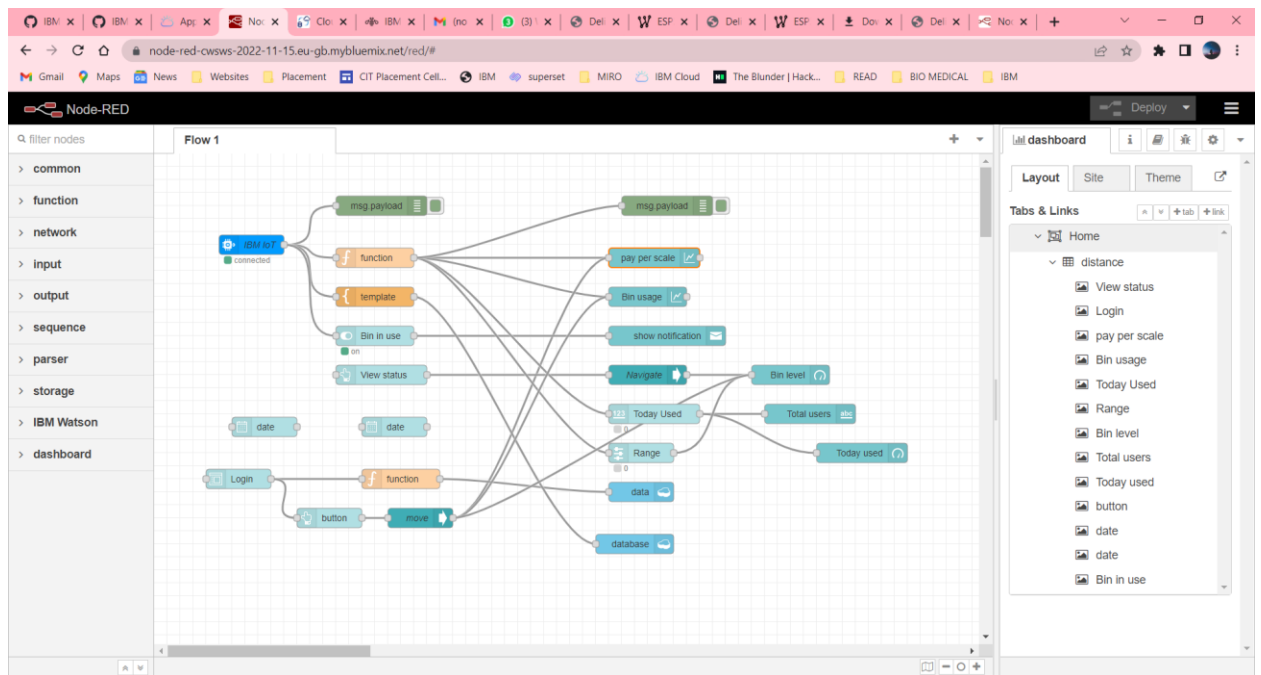


## Delivery of Sprint – 4

### Web UI Design and Deploy

Date	19/11/2022
Team ID	PNT2022TMID52815
Project Name	Smart Waste Management for Metropolitan Cities - IOT

1. Node-RED Connection setup for data transmission from IBM Watson IOT platform to Node-RED dashboard.



2. Simulate Wokwi connection to transmit data from wokwi account to IBM WatsonIoT platform and then to Node Red dashboard.

The screenshot displays the Wokwi IDE interface for a project named "ESP32-IBMconnection[original]". The left pane shows the code for "esp32-blink.ino", which includes libraries for WiFi, PubSubClient, and LiquidCrystal\_I2C. The code defines IBM credentials (ORG, DEVICE\_TYPE, DEVICE\_ID, TOKEN) and configures the ESP32 to connect to the IBM Watson IoT platform. The right pane shows a simulation of the hardware, including an ESP32 microcontroller, a blue LCD display, and various sensors. The LCD display shows "Inches 26.8 cm 68.0". The bottom pane shows the simulation output, indicating successful publishing of data to the IBM Watson IoT platform.

```
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 "gwobk3" // IBM organisation id
10 #define DEVICE_TYPE "NodeMCU" // Device type mentioned in ibm watson iot p
11 #define DEVICE_ID "Anu" // Device ID mentioned in ibm watson iot platform
12 #define TOKEN "123456789" // Token
13
14 //----- customise above values -----
15
16 char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; // server n
17 char publishTopic[] = "iot-2/evt/data/fmt/json"; // topic na
18 char topic[] = "iot-2/cmd/led/fmt/String"; // cmd Repr
19 char authMethod[] = "use-token-auth"; // authenti
20 char token[] = TOKEN;
21 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID; //client id
22
23 //-----
24
25 WiFiClient wificlient; // creating i
26 PubSubClient client(server, 1883, wificlient);
27
28 #define ECHO_PIN 12
29 #define TRIG_PIN 13
30 float dist;
31 String data;
32 bool SealBin = true;
33 void setup()
34 {
```

Simulation

00:32.306 3%

Publish OK

Sending payload: {"Warning":67.98 }

Publish OK

Sending payload: {"Warning":67.98 }

Publish OK

### 3. Data transfer to Watson IOT platform.

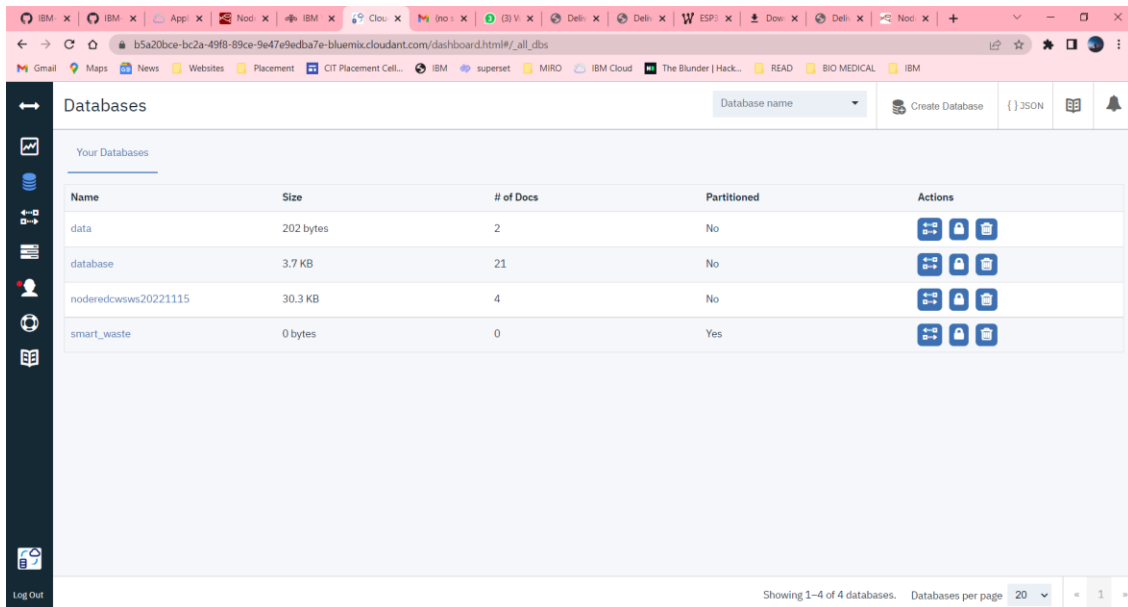
The screenshot shows the IBM Watson IoT Platform interface. The top navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces'. The main content area displays a list of devices. The selected device, 'Smart\_waste\_management\_system', is shown with its details and a 'Recent Events' tab. The events table lists data received from the device.

Event	Value	Format	Last Received
data	{"High_Alert":58.99}	json	a few seconds ago
data	{"High_Alert":58.99}	json	a few seconds ago
data	{"type":"Buffer","data":[123,49,54,57,46,57,55,...]}	json	a few seconds ago
data	{"type":"Buffer","data":[123,49,54,57,46,57,55,...]}	json	a few seconds ago

### 4. Data transfer from IBM Watson IOT platform and wokwi to Node red.

The screenshot shows a Node-RED flow titled 'Data Transmission from IBM IOT to Node RED'. The flow starts with an 'IBM IoT' node connected to a 'msg.payload' node. The data is then processed by a 'function' node, which branches into several output nodes: 'Usage Per Hour', 'Bin Usage', 'show notification', 'Navigate', 'Bin Level', 'Today Used', and 'Range'. The flow also includes a 'Login' node and a 'button' node. The right sidebar shows the debug console with a log of messages received from the IBM IoT platform.

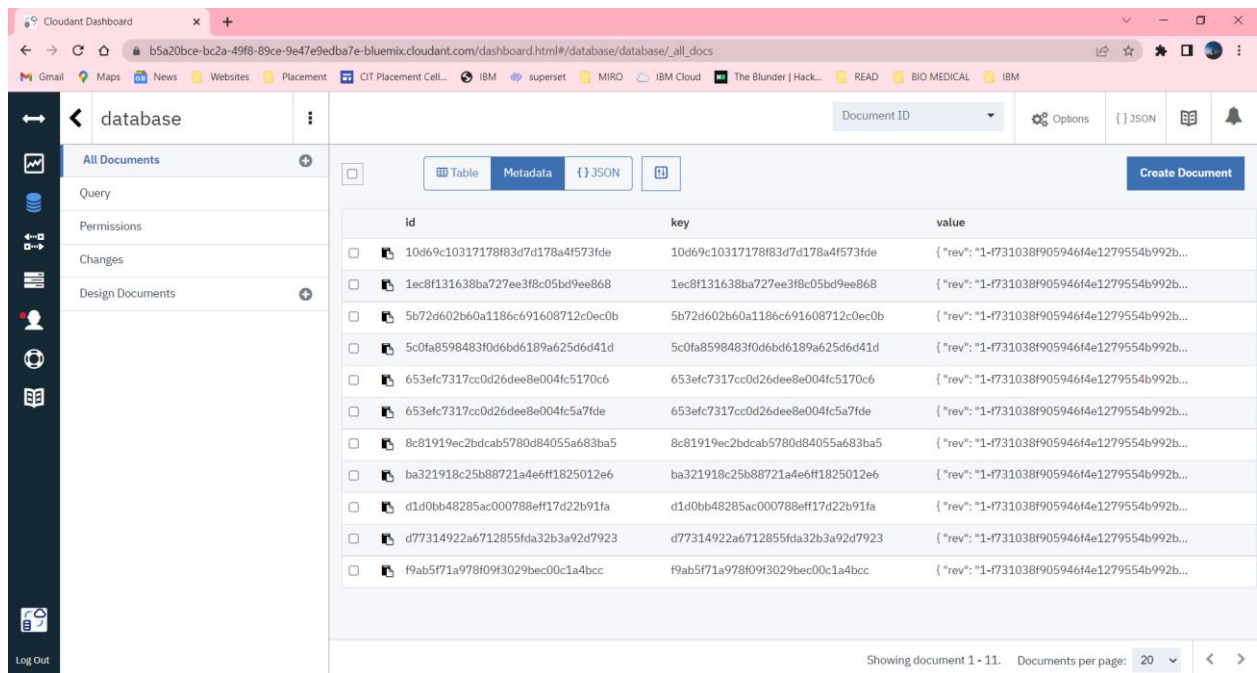
## 5 . Storing database in IBM cloudant DB.



The screenshot shows the IBM Cloudant Databases dashboard. The URL is [b5a20bce-bc2a-49f8-89ce-9e47e9edba7e-bluemix.cloudant.com/dashboard.html#/all\\_dbs](https://b5a20bce-bc2a-49f8-89ce-9e47e9edba7e-bluemix.cloudant.com/dashboard.html#/all_dbs). The dashboard displays a table of databases:

Name	Size	# of Docs	Partitioned	Actions
data	202 bytes	2	No	[Icons for actions]
database	3.7 KB	21	No	[Icons for actions]
noderedcsws20221115	30.3 KB	4	No	[Icons for actions]
smart_waste	0 bytes	0	Yes	[Icons for actions]

At the bottom, it says "Showing 1-4 of 4 databases. Databases per page: 20".



The screenshot shows the IBM Cloudant database view for the 'database' database. The URL is [b5a20bce-bc2a-49f8-89ce-9e47e9edba7e-bluemix.cloudant.com/dashboard.html#/database/database/\\_all\\_docs](https://b5a20bce-bc2a-49f8-89ce-9e47e9edba7e-bluemix.cloudant.com/dashboard.html#/database/database/_all_docs). The view displays a table of documents:

id	key	value
10d69c10317178f83d7d178a4f573fde	10d69c10317178f83d7d178a4f573fde	{ "rev": "1-f731038f905946f4e1279554b992b..." }
1ec8f131638ba727ee3f8c05bd9ee868	1ec8f131638ba727ee3f8c05bd9ee868	{ "rev": "1-f731038f905946f4e1279554b992b..." }
5b72d602b60a1186c691608712c0ec0b	5b72d602b60a1186c691608712c0ec0b	{ "rev": "1-f731038f905946f4e1279554b992b..." }
5c0fa8598483f0d6bd6189a625d6d41d	5c0fa8598483f0d6bd6189a625d6d41d	{ "rev": "1-f731038f905946f4e1279554b992b..." }
653efc7317cc0d26dee8e004fc5170c6	653efc7317cc0d26dee8e004fc5170c6	{ "rev": "1-f731038f905946f4e1279554b992b..." }
653efc7317cc0d26dee8e004fc5a7fde	653efc7317cc0d26dee8e004fc5a7fde	{ "rev": "1-f731038f905946f4e1279554b992b..." }
8c81919ec2bdcab5780d84055a683ba5	8c81919ec2bdcab5780d84055a683ba5	{ "rev": "1-f731038f905946f4e1279554b992b..." }
ba321918c25b88721a4e6ff1825012e6	ba321918c25b88721a4e6ff1825012e6	{ "rev": "1-f731038f905946f4e1279554b992b..." }
d1d0bb48285ac000788eff17d22b91fa	d1d0bb48285ac000788eff17d22b91fa	{ "rev": "1-f731038f905946f4e1279554b992b..." }
d77314922a6712855fda32b3a92d7923	d77314922a6712855fda32b3a92d7923	{ "rev": "1-f731038f905946f4e1279554b992b..." }
f9ab5f71a978f09f3029bec00c1a4bcc	f9ab5f71a978f09f3029bec00c1a4bcc	{ "rev": "1-f731038f905946f4e1279554b992b..." }

At the bottom, it says "Showing document 1 - 11. Documents per page: 20".

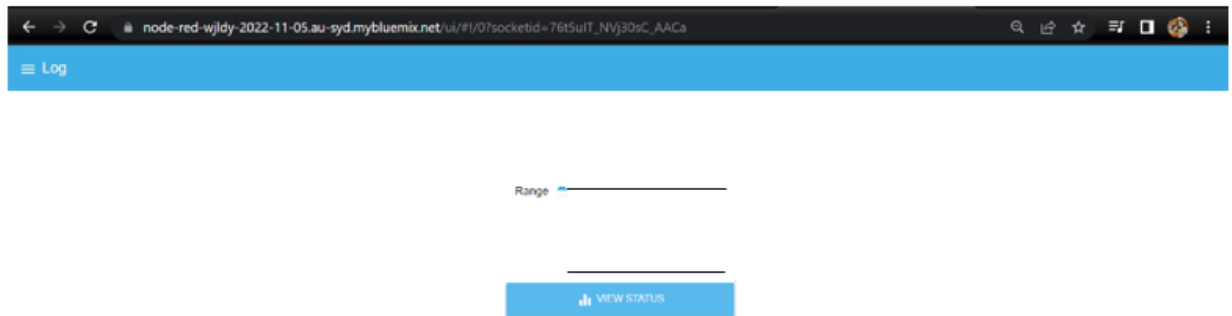
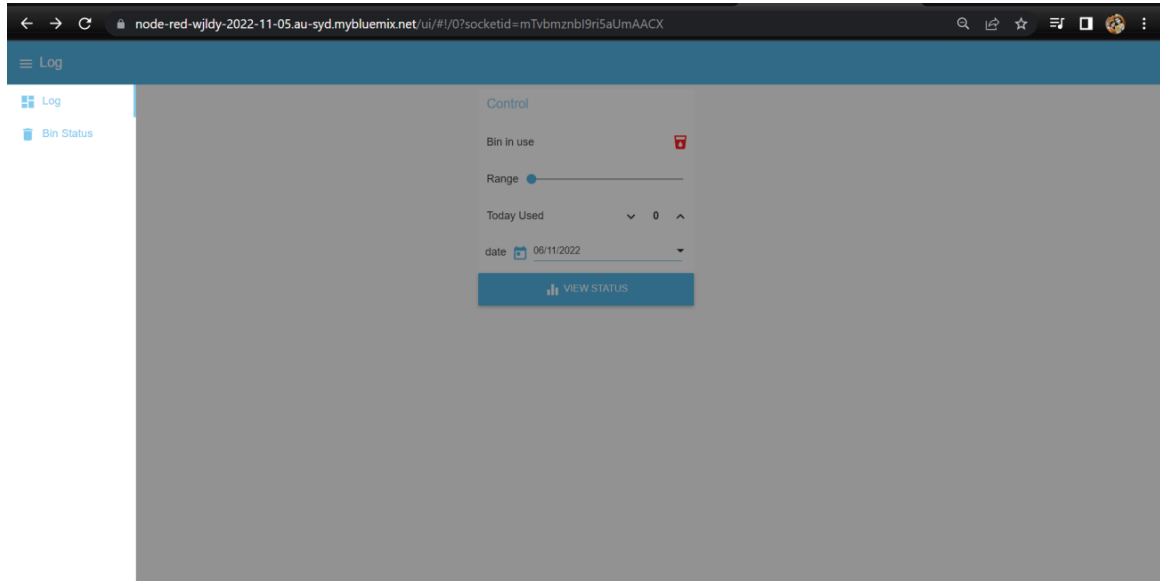
## 6.Data is stored in JSON format

The screenshot shows the IBM Bluemix Cloudant dashboard. The browser's address bar displays the URL: `b5a20bce-bc2a-49f8-89ce-9e47e9edba7e-bluemix.cloudant.com/dashboard.html#database/database/5c0fa8598483f0d6bd6189a625d6d41d`. The dashboard header includes a navigation bar with the text "database" and a dropdown menu showing "5c0fa8598483f0d6bd6189a625d6d41d". To the right of the header are icons for JSON, a document, and a bell. Below the header is a toolbar with buttons: "Save Changes" (with a checkmark icon), "Cancel", "Upload Attachment", "Clone Document", and "Delete". The main content area displays a JSON document in a code editor. The JSON is as follows:

```
1 {
2   "_id": "5c0fa8598483f0d6bd6189a625d6d41d",
3   "_rev": "1-f731038f905946f4e1279554b992bff9",
4   "topic": "iot-2/type/NodeMCU/id/Anu/evt/data/format/json",
5   "payload": "This is the payload: [object Object]!",
6   "deviceId": "Anu",
7   "deviceType": "NodeMCU",
8   "eventType": "data",
9   "format": "json"
10 }
```

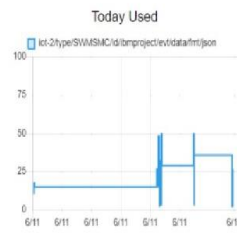
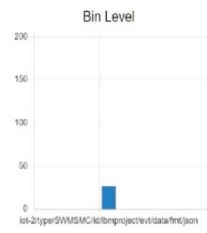
On the left side of the dashboard is a dark sidebar with various icons for navigation. At the bottom of the sidebar is a "Log Out" button.

## 7. Web UI



Bin Status

Bin Status



date 06/11/2022







