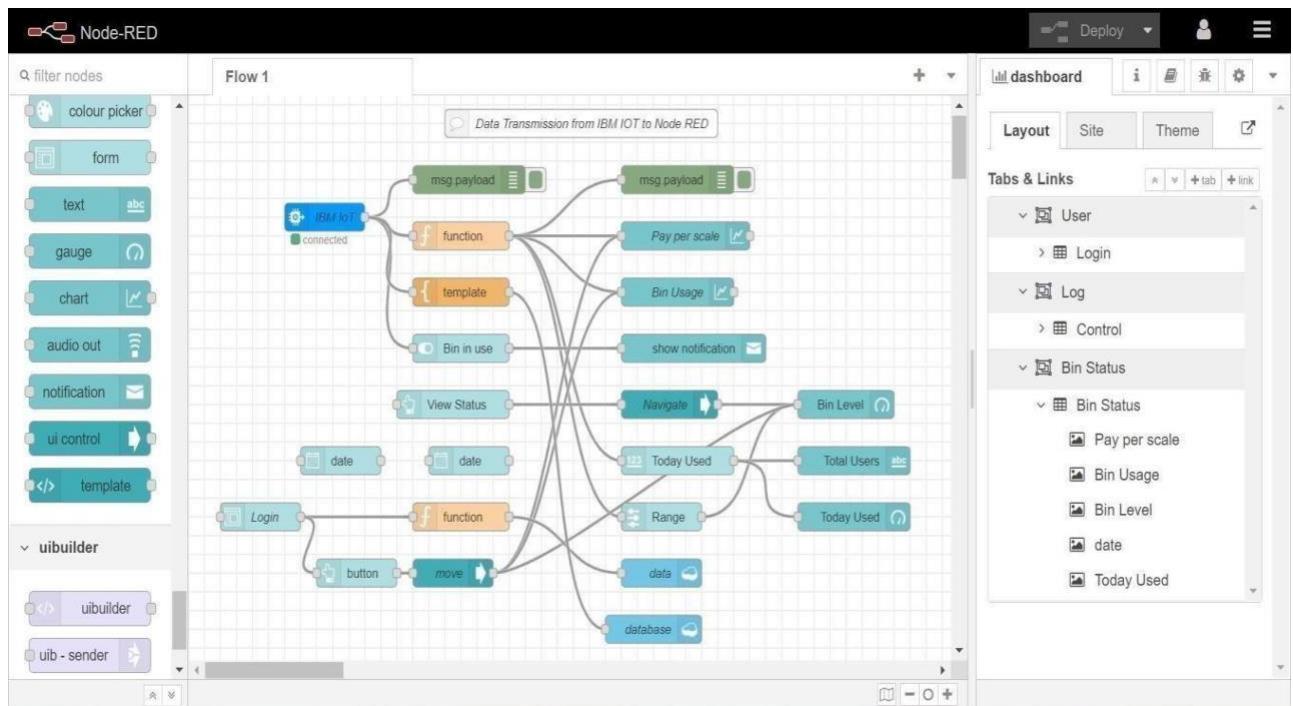


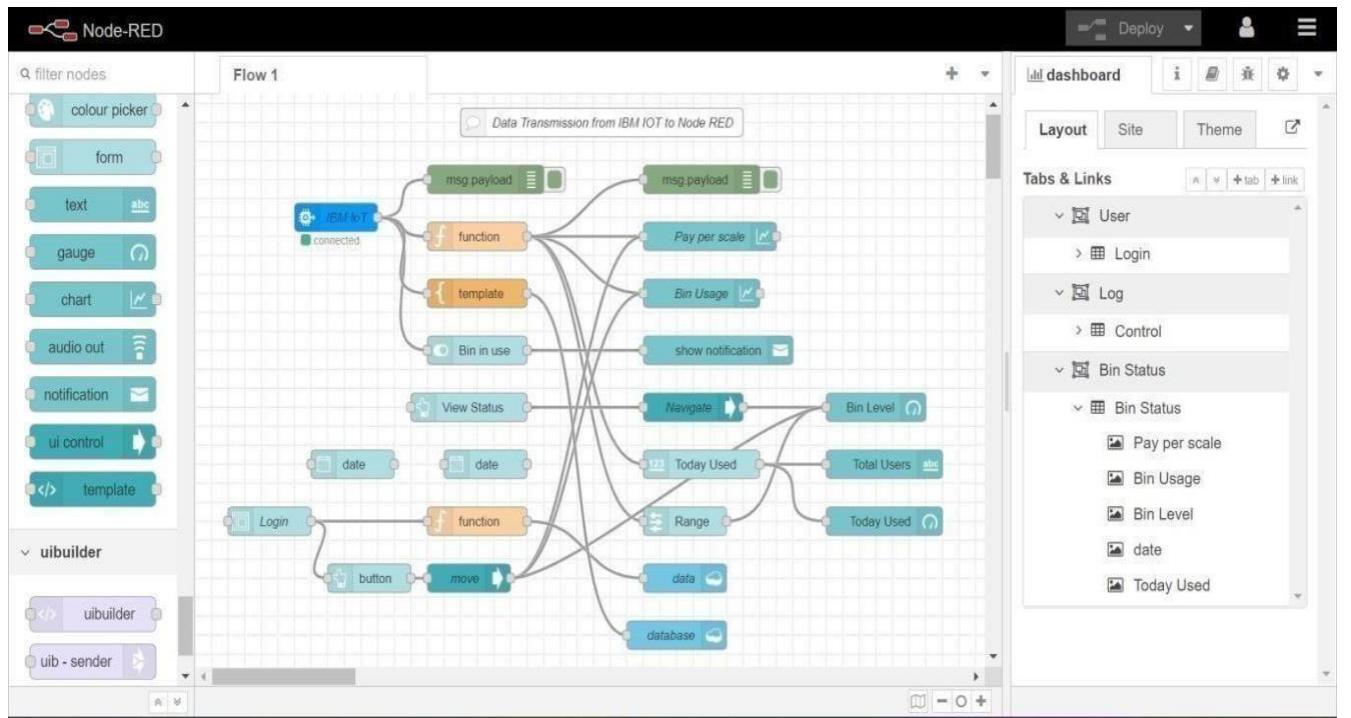
Delivery of Sprint – 4

Date	November 10 2022
Team ID	PNT2022TMID16061
Project Name	Smart Waste Management for Metropolitan Cities

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

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

The screenshot shows the Wokwi IDE interface. On the left, the code editor displays the `esp32-blink.ino` sketch. The sketch includes logic for a PIR motion sensor connected to pins 21 and 22. It checks the distance from a lid (connected to pin 23) and publishes messages to a topic based on the sensor state and distance. The simulation window on the right shows a breadboard setup with a PIR sensor, a lid, and an LCD screen. The terminal output shows the published messages:

```

177
178
179
180
181
182     if(cm <= 25)
183     {
184         digitalWrite(21,HIGH);
185         String payload = "{\"High_Alert\":\"";
186         payload += cm;
187         payload += "}\"";
188         Serial.print("\n");
189         Serial.print("Sending payload: ");
190         Serial.println(payload);
191
192     if (client.publish(publishTopic, (char*) payload.c_str())) // if
193     {
194         Serial.println("Publish OK");
195     }
196     }
197     if(cm <= 50)
198     {
199         digitalWrite(22,HIGH);
200         String payload = "{\"Warning\":\"";
201         payload += cm ;
202         payload += " }";
203         Serial.print("\n");

```

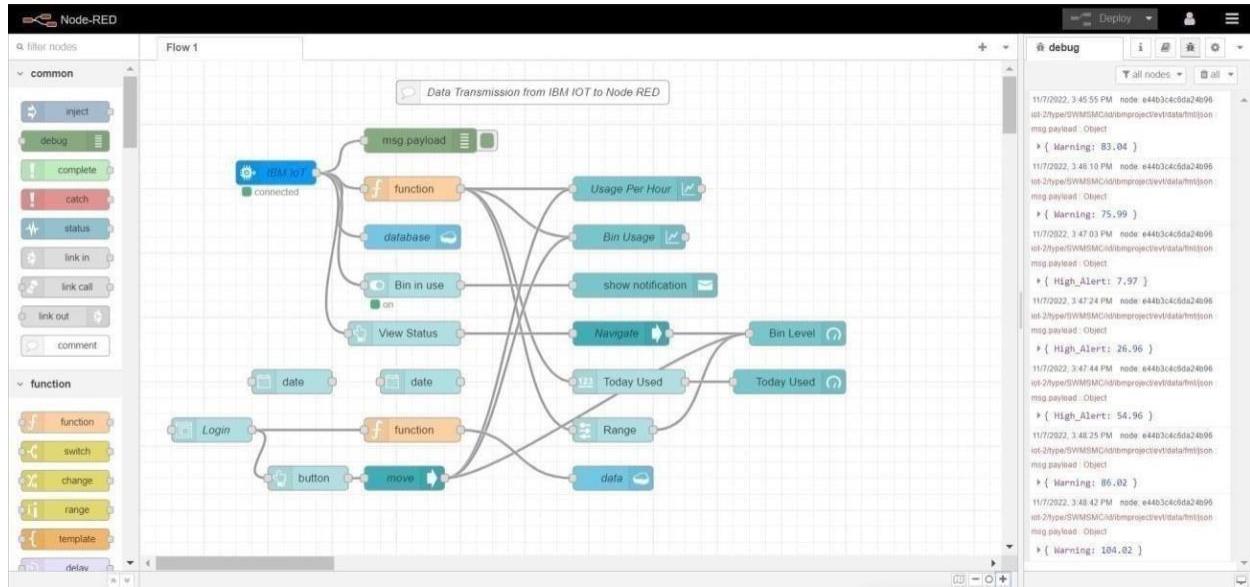
Sending distance: 26.94
Publish OK
Motion Detected
Lid Opened
High Alert!!!,Trash bin is about to be full
Lid Closed

3. Data transfer to Watson IOT platform.

The screenshot shows the IBM Watson IoT Platform interface. On the left, a sidebar menu includes icons for device types, interfaces, and actions. The main area displays a table of recent events for a specific device. The table has columns for Event, Value, Format, and Last Received. The data shows several events labeled 'data' with JSON values representing sensor readings.

Event	Value	Format	Last Received
data	{"Warning":28.95}	json	a few seconds ago
data	{"Warning":28.95}	json	a few seconds ago
data	{"Warning":49.98}	json	a minute ago
data	{"Warning":49.98}	json	a minute ago
data	{"Warning":11.03}	json	a minute ago

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



5 . Storing database in IBM cloudant DB.

Name	Size	# of Docs	Partitioned	Actions
login_credentials	13.7 KB	111	No	
noderedwjldy20221105	37.4 KB	4	No	
sample	59.4 KB	351	No	
sensor_data	15.7 KB	90	No	

Showing 1–4 of 4 databases. Databases per page: 20 | « 1 »

The screenshot shows the Apache CouchDB Futon interface. On the left is a sidebar with icons for database management. The main area has a header with "sensor_data" and "Document ID" dropdowns, along with "Options", "JSON", and other buttons. Below is a table view of documents:

	id	key	value
1	0198213c192cb2c244cc2433f1...	0198213c192cb2c244cc2433f1...	{"rev": "1-cde2dd17c519394df..."}
2	0198213c192cb2c244cc2433f1...	0198213c192cb2c244cc2433f1...	{"rev": "1-d26c5b40891e13c6c..."}
3	0198213c192cb2c244cc2433f1...	0198213c192cb2c244cc2433f1...	{"rev": "1-cde2dd17c519394df..."}
4	0198213c192cb2c244cc2433f1...	0198213c192cb2c244cc2433f1...	{"rev": "1-f96eb0460bc16cfab0..."}
5	1a921f21fbe229b86f599acb45...	1a921f21fbe229b86f599acb45...	{"rev": "1-7226f08794cd47b7c..."}
6	1a921f21fbe229b86f599acb45...	1a921f21fbe229b86f599acb45...	{"rev": "1-1bbdd9a985bd56cf9..."}
7	20a854e5445fa818e6c1de049...	20a854e5445fa818e6c1de049...	{"rev": "1-7226f08794cd47b7c..."}
8	20a854e5445fa818e6c1de049...	20a854e5445fa818e6c1de049...	{"rev": "1-3ad288ecad57f039e..."}
9	20a854e5445fa818e6c1de049...	20a854e5445fa818e6c1de049...	{"rev": "1-1bbdd9a985bd56cf9..."}
10	298ed6fh9h3h815f5ac7c061e...	298ed6fh9h3h815f5ac7c061e...	{"rev": "1-4e7240f6e5307a1h9..."}

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

6. Data is stored in JSON format

The screenshot shows the Apache CouchDB Futon interface for a specific document. The URL in the address bar is "sensor_data > 0198213c192cb2c244cc2433f1802b91". The top bar includes "Save Changes", "Cancel", "Upload Attachment", "Clone Document", and "Delete" buttons. The main area displays the document's JSON content:

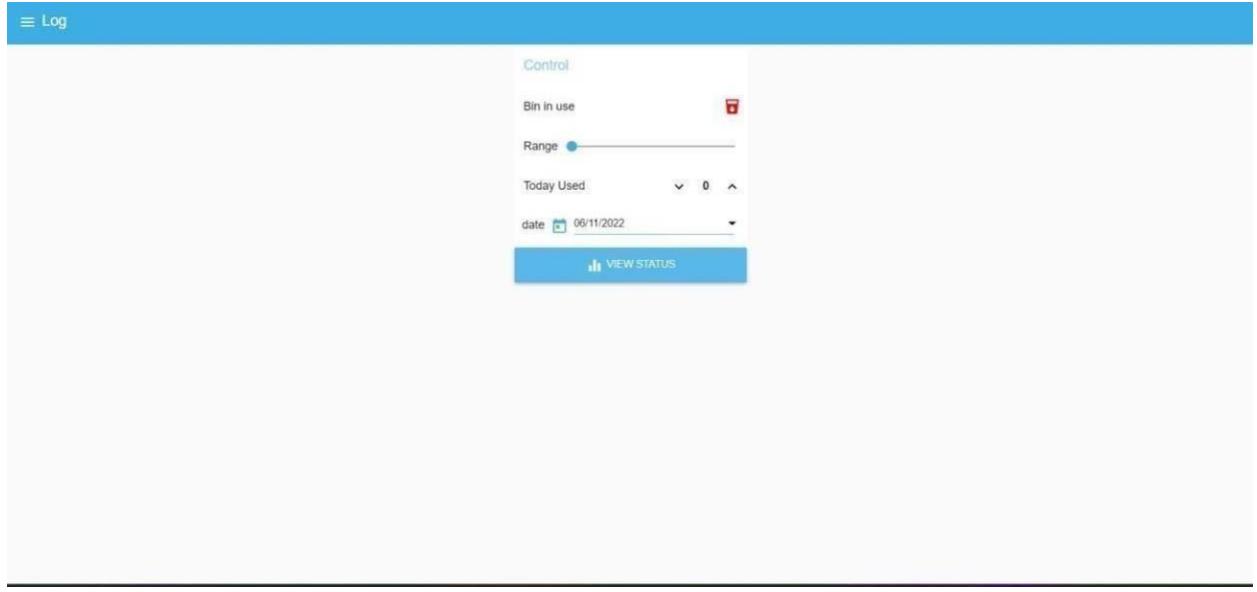
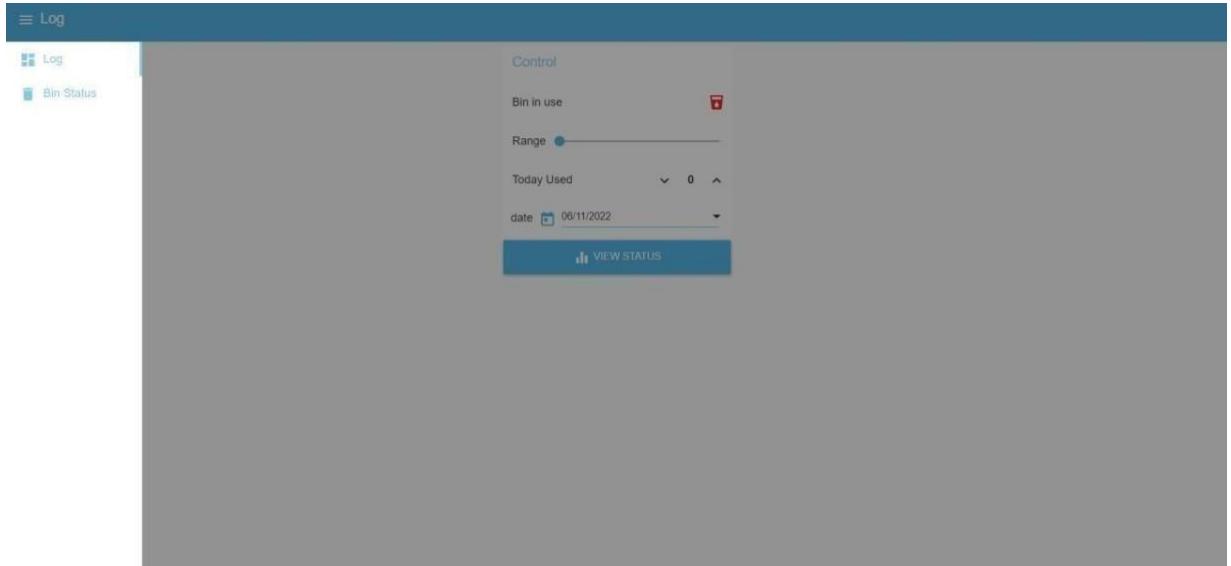
```

1 * [
2   "_id": "0198213c192cb2c244cc2433f1802b91",
3   "_rev": "1-cde2dd17c519394dffeb774730c495f8b",
4   "topic": "iot-2/type/SWMSMC/id/ibmproject/evt/data/fmt/json",
5   "payload": {
6     "Warning!!": "244.97left"
7   },
8   "deviceId": "ibmproject",
9   "deviceType": "SWMSMC",
10  "eventType": "data",
11  "format": "json"
12 ]

```

At the bottom, there is a "Log Out" button.

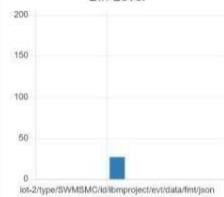
7. Web UI



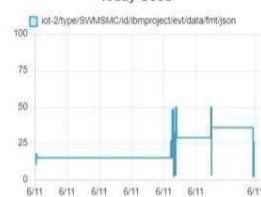
≡ Bin Status

Bin Status

Bin Level



Today Used



Bin Level



date

Today Used

