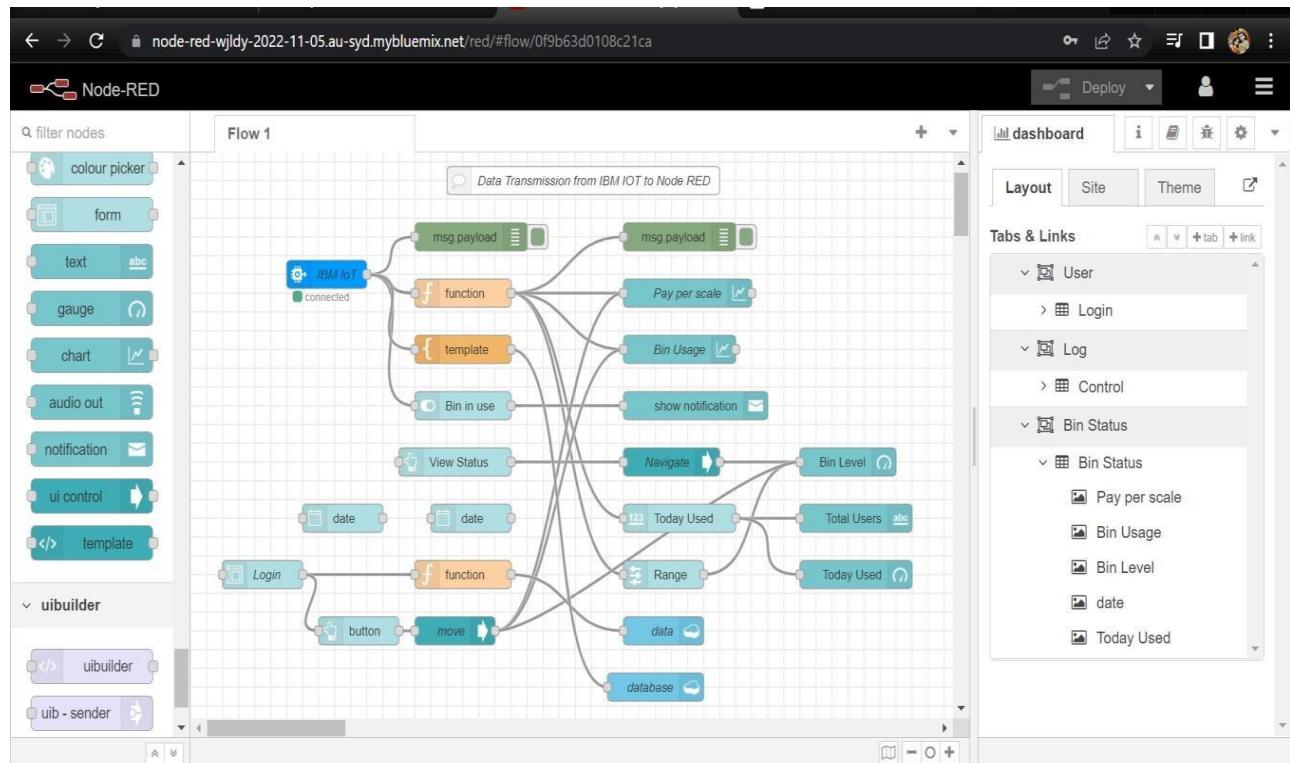


## Web UI Design and Deploy

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





The screenshot shows the Wokwi web interface for an ESP32 project named "ESP32-IBMconnection". The code in the left pane is as follows:

```

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");

```

The right pane shows a simulation of the hardware. A PIR Motion Sensor is connected to the ESP32. The console log displays the following output:

```

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

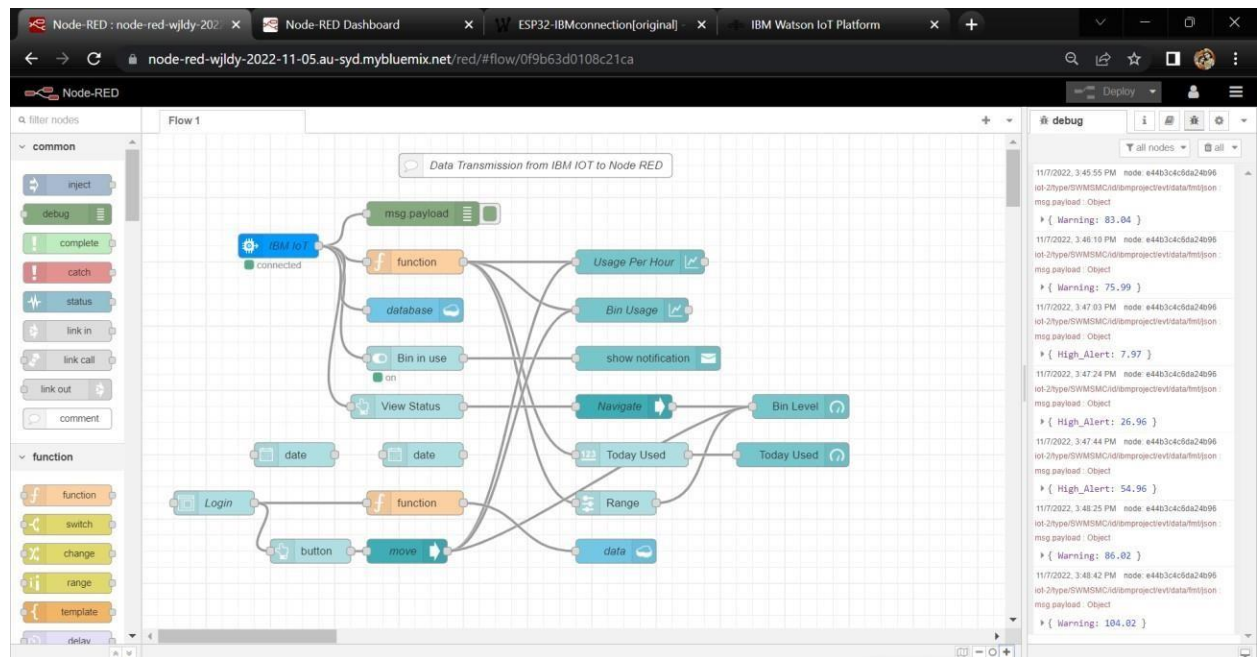
```

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

The screenshot shows the IBM Watson IoT Platform dashboard. The "Browse" tab is selected, and the "Recent events" section displays a table of data received from a device. The table has four columns: Event, Value, Format, and Last Received.

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.

ee6aeb4a-3006-499e-940e-af19edf953bf-bluemix.cloudant.com/dashboard.html#/all\_dbs

## Databases

Database name ▼ Create Database { } JSON 🔔

Your Databases

Name	Size	# of Docs	Partitioned	Actions
login_credentials	13.7 KB	111	No	<span>🔍</span> <span>🔒</span> <span>🗑️</span>
noderedwjldy20221105	37.4 KB	4	No	<span>🔍</span> <span>🔒</span> <span>🗑️</span>
sample	59.4 KB	351	No	<span>🔍</span> <span>🔒</span> <span>🗑️</span>
sensor_data	15.7 KB	90	No	<span>🔍</span> <span>🔒</span> <span>🗑️</span>

Showing 1-4 of 4 databases. Databases per page: 20 ◀ 1 ▶

ee6aeb4a-3006-499e-940e-af19edf953bf-bluemix.cloudant.com/dashboard.html#/database/sensor\_data/all\_docs

## sensor\_data

Document ID ▼ Options { } JSON 🔔

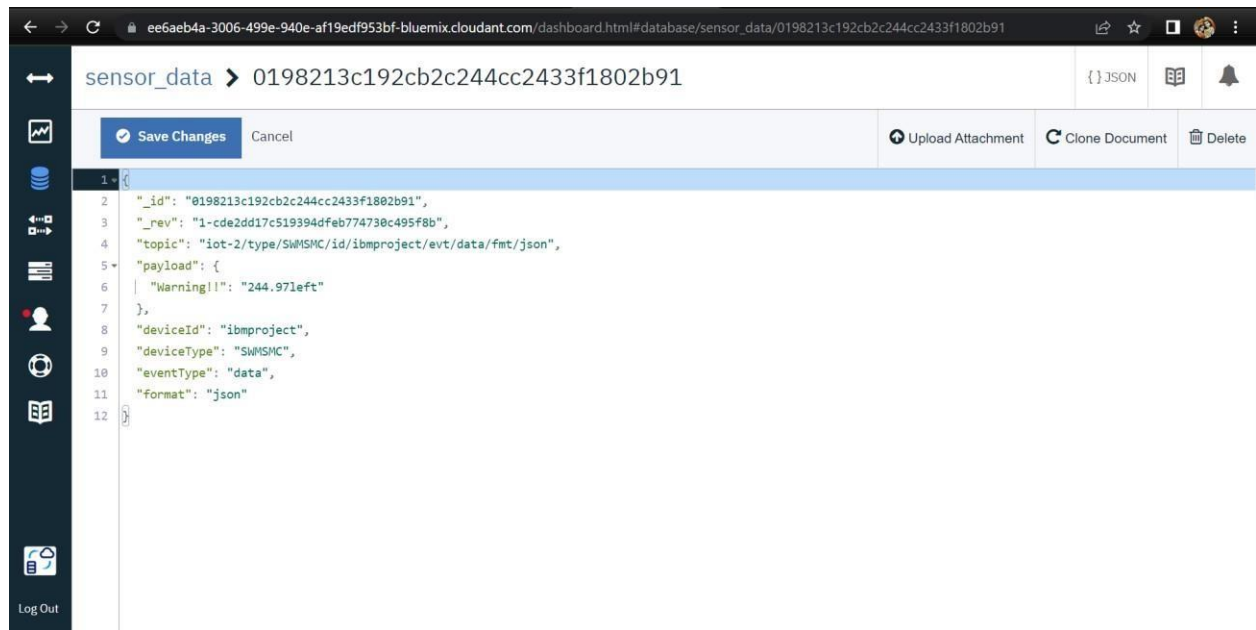
All Documents + Query Permissions Changes Design Documents +

Table Metadata { } JSON 📄 Create Document

	id	key	value
<input type="checkbox"/>	0198213c192cb2c244cc2433f1...	0198213c192cb2c244cc2433f1...	{ "rev": "1-cde2dd17c519394df..."
<input type="checkbox"/>	0198213c192cb2c244cc2433f1...	0198213c192cb2c244cc2433f1...	{ "rev": "1-d26c5b40891e13c6c..."
<input type="checkbox"/>	0198213c192cb2c244cc2433f1...	0198213c192cb2c244cc2433f1...	{ "rev": "1-cde2dd17c519394df..."
<input type="checkbox"/>	0198213c192cb2c244cc2433f1...	0198213c192cb2c244cc2433f1...	{ "rev": "1-f96eb0460bc16cfab0..."
<input type="checkbox"/>	1a921f21cbe229b86f599acb45...	1a921f21cbe229b86f599acb45...	{ "rev": "1-7226f08794cd47b7c..."
<input type="checkbox"/>	1a921f21cbe229b86f599acb45...	1a921f21cbe229b86f599acb45...	{ "rev": "1-1bbdd9a985bd56cf9..."
<input type="checkbox"/>	20a854e5445fa818e6c1de049...	20a854e5445fa818e6c1de049...	{ "rev": "1-7226f08794cd47b7c..."
<input type="checkbox"/>	20a854e5445fa818e6c1de049...	20a854e5445fa818e6c1de049...	{ "rev": "1-3ad288ecad57f039e..."
<input type="checkbox"/>	20a854e5445fa818e6c1de049...	20a854e5445fa818e6c1de049...	{ "rev": "1-1bbdd9a985bd56cf9..."
<input type="checkbox"/>	298ed6fhd9b3b815f5ac7c061e...	298ed6fhd9b3b815f5ac7c061e...	{ "rev": "1-4e7240f6e5307a1b9..."

Showing document 1 - 20. Documents per page: 20 ◀ ▶

6. Data is stored in JSON format



## 7. Web UI

