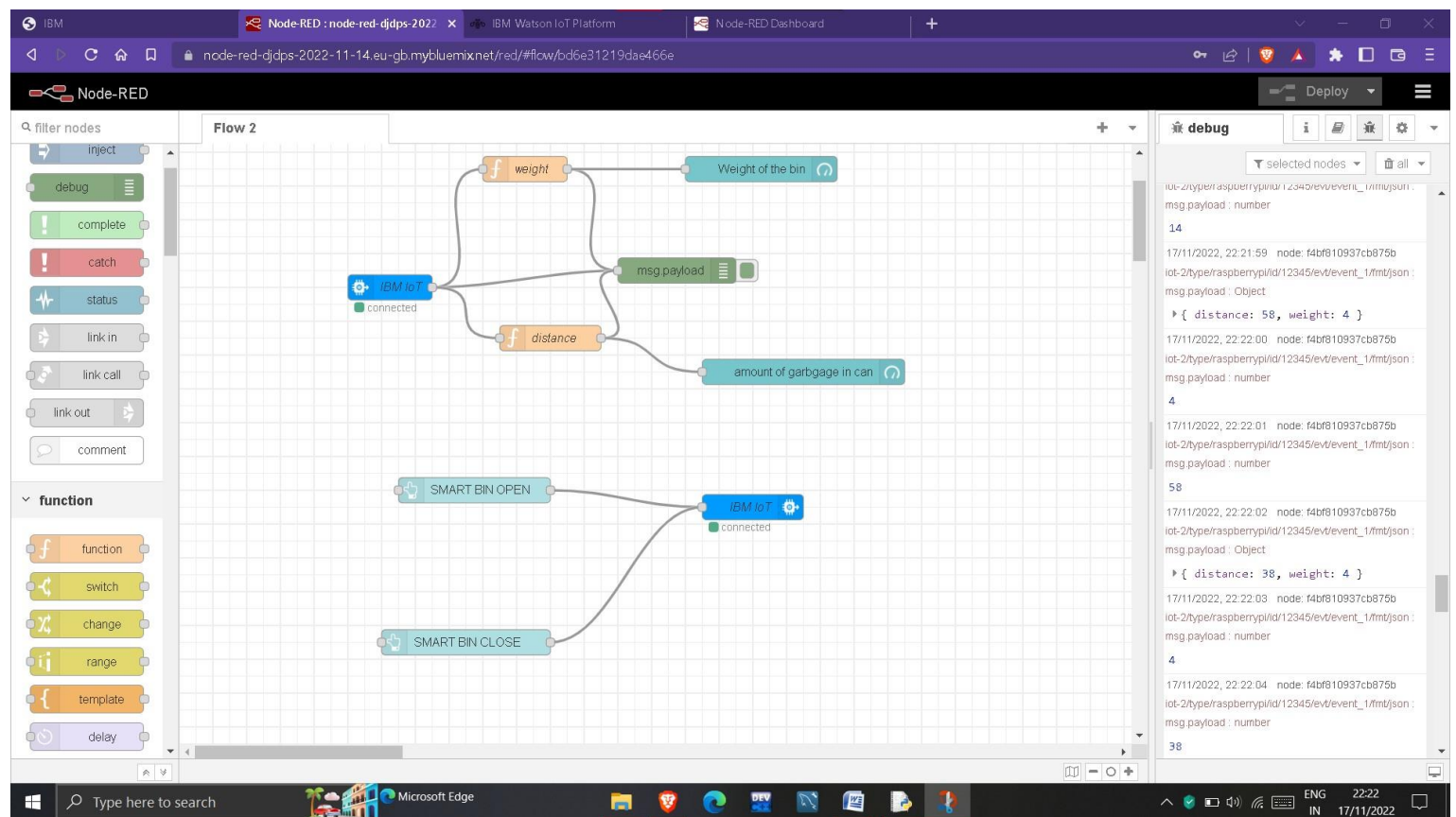


SPRINT 4
TEAM ID: PNT2022TMID20979

Smart Waste Management System For Metropolitan Cities

NODE RED UI:

Node-red-dashboard



The data to nodes in the node-red are provided with the help of the python script via the ibm cloud which is considered to be the data from the data values from the sensor

To calculate the distance ultrasonic sensor is used, and as well as to calculate the weight weight sensor is used .

There are certain assumptions assumed by us, They are

- The length of the trash can is assumed to be 200 cm.
- The maximum weight of the can is assumed to be 2 Kg.
- If the garbage distance goes more than 180cm i.e more than 90% of the trash can , the sensor is has to send to send an alert to the garbage collector.
- If the alert is received , then the garbage collector has to come and collect the garbage.
- The current weight and the garbage distance is to be updated periodically, i.e for 5 minutes

FUNCTION CONFIGURATION FOR WEIGHT:

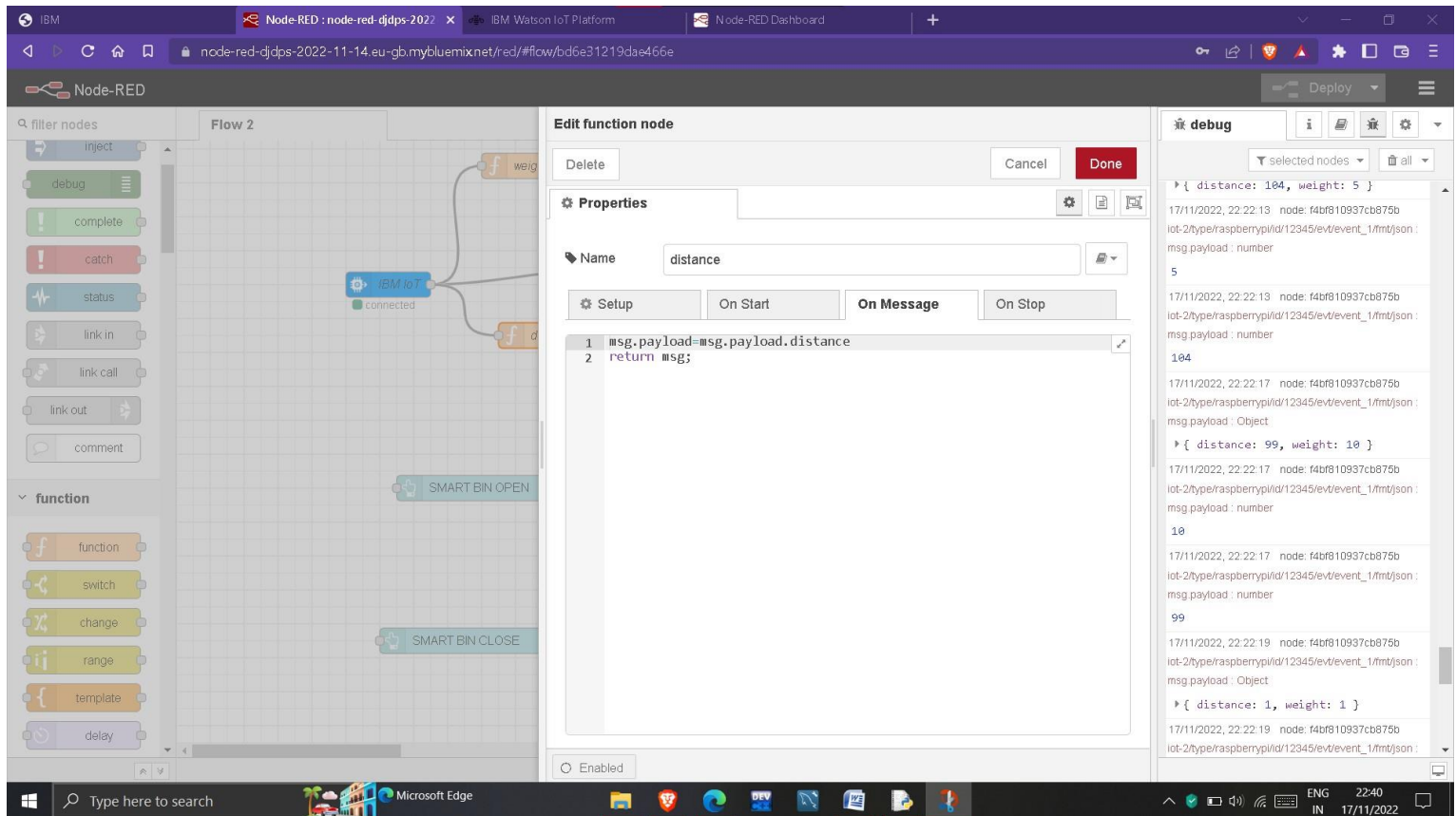
The screenshot displays the Node-RED web interface in a browser. The main workspace shows a flow with an 'IBM IoT' node connected to a 'weight' function node. The 'Edit function node' panel is open, showing the following configuration:

- Name:** weight
- Setup:** On Message
- Code:**

```
1 msg.payload=msg.payload.weight
2 return msg;
```
- Enabled:** ☒

The debug console on the right shows a series of messages. The first message is a JSON object: `{ distance: 184, weight: 5 }`. Subsequent messages show the weight being updated to 104, then 99, then 10, and finally 1. The messages also include a timestamp and a node ID.

FUNCTION CONFIGURATION FOR AMOUNT OF GRABGE IN CAN:



UI :

A simple web page which shows the amount of garbage in the smart bin and indicates free space in the trash bin. Then the web page also displays the weight of garbage present in the smart bin. It can hold a maximum of 10 kg and at the same time the length of the smart bin is 200 cm. A alert message is sent if the requirements are passed, and then the current co ordinates of the smart bin is being sent to the garbage collector .

The web page also composed of two buttons, with the help of the buttons we can open the smart bin and as well as close the smart bin . the command from the user is sent to the sensor and the dustbin is closed and as well as opened.

STORING THE DATA IN IBM CLOUDNT DB :

Node-RED: node-red-djps-2022

IBM Watson IoT Platform

Node-RED Dashboard

Service Details - IBM Cloud

Cloudant Dashboard - datab...

0f2bd5c3-689b-4106-a014-ffd7956e007-bluemix.cloudant.com/dashboard.html#database/nodereddjps20221114/_all_docs

Document ID

Options

{ } JSON

Create Document

All Documents

Query

Permissions

Changes

Design Documents

library

Metadata

Views

flow_entries_by_app_and_type

lib_entries_by_app_and_type

Table

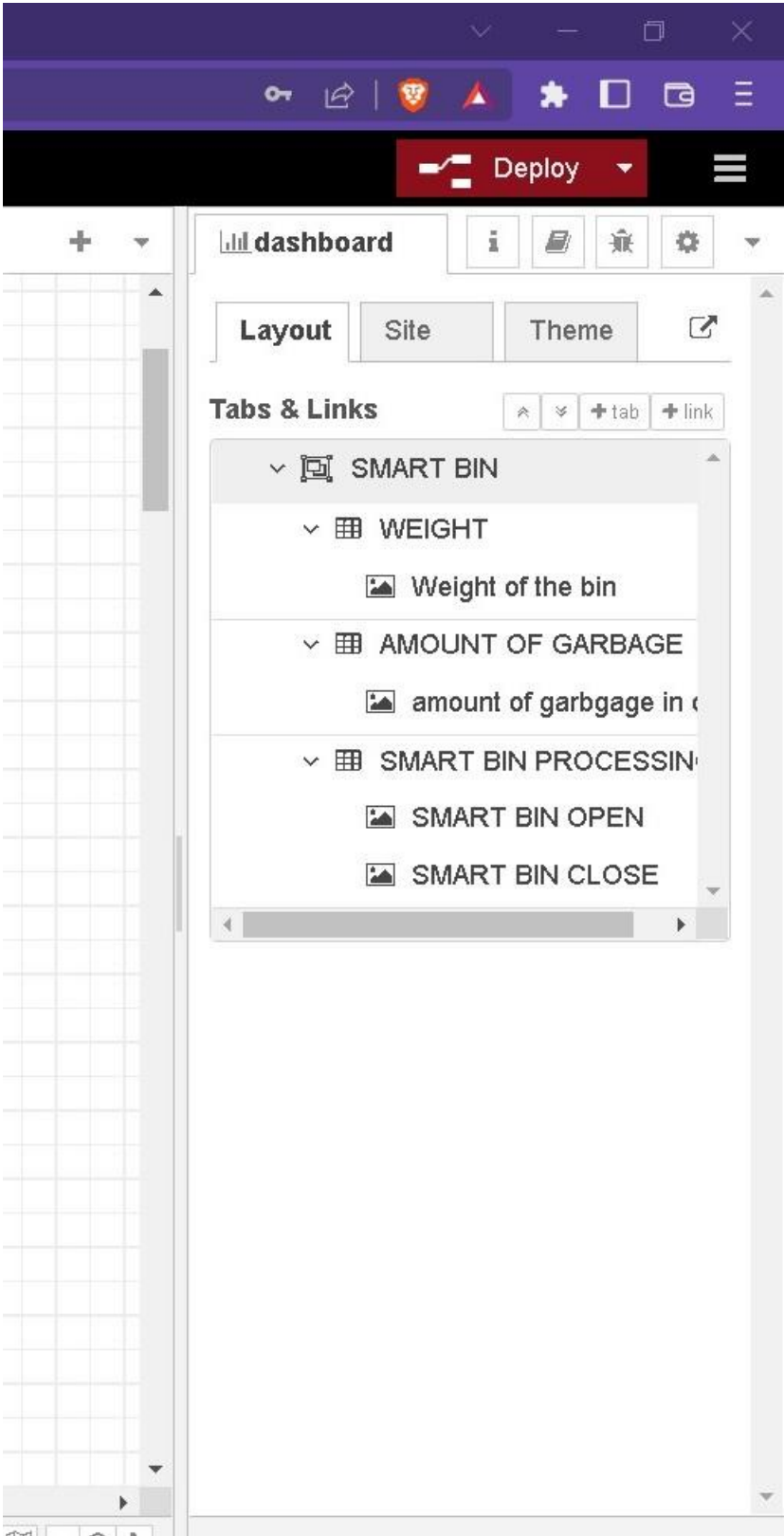
Metadata

{ } JSON

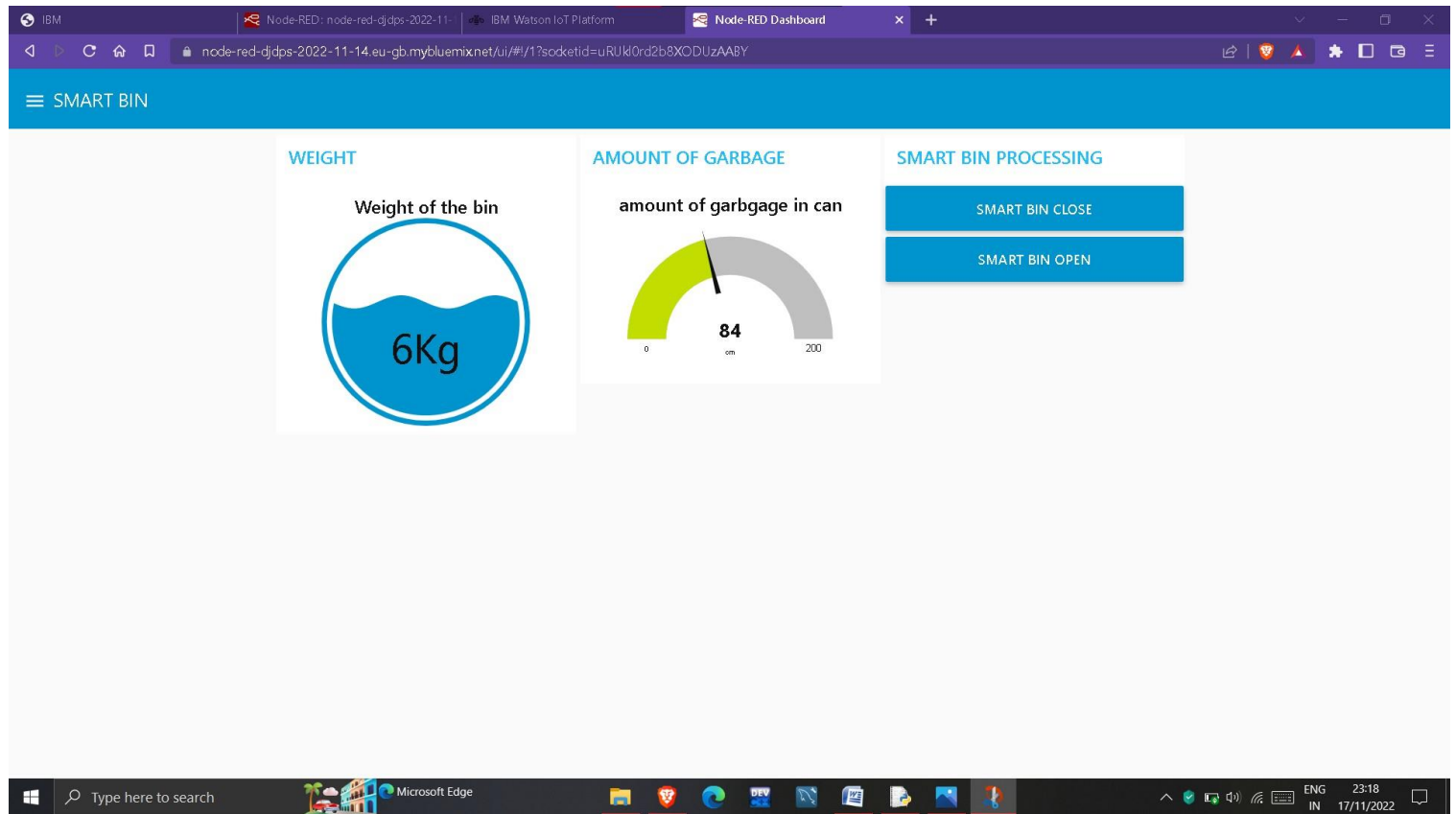
id	key	value
_design/library	_design/library	{ "rev": "1-c93136490a0976308f8b3e88987...
nodered/credential	nodered/credential	{ "rev": "2-bb3f8de539a61c5416b703cb7ee...
nodered/flow	nodered/flow	{ "rev": "52-e03b5679ad629fd5c8e2cc21ecd...
nodered/settings	nodered/settings	{ "rev": "18-b2fb953d9d83951fbc0045d46...

Showing document 1 - 4. Documents per page: 20

DASHBOARD :



WEB UI :



Here the web page denotes the weight of garbage present in the smart bin and as well as the, length of the smart bin filled with garbage in the above the current garbage weight is 6 kg and as well as the length of smart bin filled with garbage is 200 cm .

There is button for smart bin processing, if we want to open and close the smart bin , we can perform this with the help of the buttons .The data will be sent from the user interface to the sensors and the the required operation is performed .

The command from the web user is sent to the sensors successfully :

The screenshot displays a dual-screen setup. On the left, a Python 3.7.0 Shell window shows the execution of a script that connects to an IoT device and publishes sensor data. The output indicates successful connections and data publishing for distance and weight measurements. On the right, a web browser window shows the Node-RED interface for a 'SMART BIN' system. The interface includes two main sections: 'WEIGHT' and 'AMOUNT OF GARBAGE'. The 'WEIGHT' section shows a circular gauge with the text 'Weight of the bin' and a value of '1Kg'. The 'AMOUNT OF GARBAGE' section shows a semi-circular gauge with the text 'amount of garbgage in can' and a value of '17 cm'. Below these gauges, there is a 'SMART BIN PROCESSING' section with two buttons: 'SMART BIN CLOSE' and 'SMART BIN OPEN'. The Windows taskbar at the bottom shows the date and time as 23:29 on 17/11/2022.

```
Python 3.7.0 Shell*
File Edit Shell Debug Options Window Help
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:59:51) [MSC v.1914 64 bit (AMD64)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
-- RESTART: c:\Users\MPK\AppData\Local\Programs\Python\Python37\sprint 1.py --
2022-11-17 23:28:48,058 ibmiotf.device.Client INFO Connected successfully: d:t5udf
e:raspberrypi:12345
Published Data to IOT Watson:
Distance= 55 cm
Weight = 8 Kg

Published Data to IOT Watson:
Distance= 155 cm
Weight = 10 Kg

Command received: smart bin closed
The Smart Bin is Close now
Published Data to IOT Watson:
Distance= 48 cm
Weight = 9 Kg

Command received: smart bin closed
The Smart Bin is Close now
Published Data to IOT Watson:
Distance= 17 cm
Weight = 1 Kg
```

SMART BIN

WEIGHT

Weight of the bin

1Kg

AMOUNT OF GARBAGE

amount of garbgage in can

17 cm

SMART BIN PROCESSING

SMART BIN CLOSE

SMART BIN OPEN

The command for closing the smart bin is received and it also has been executed successfully.