Assignment 3

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Q: Visualisation of water tank level and its light intensity using python and IBM platform.

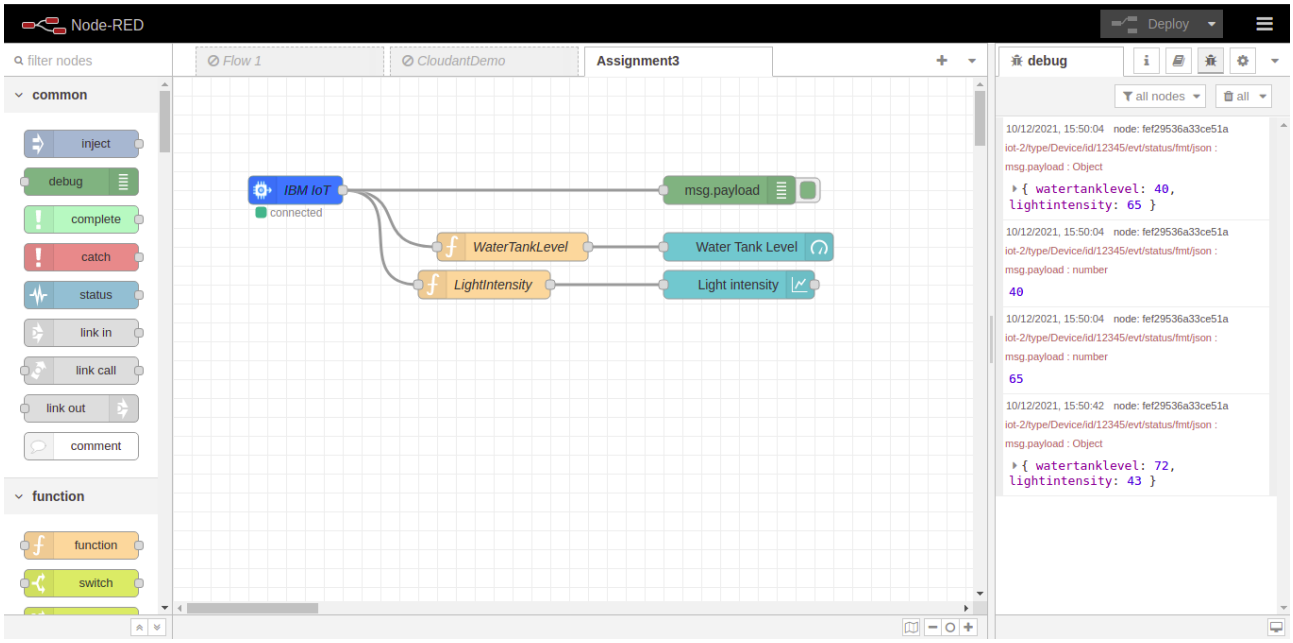
Ans:

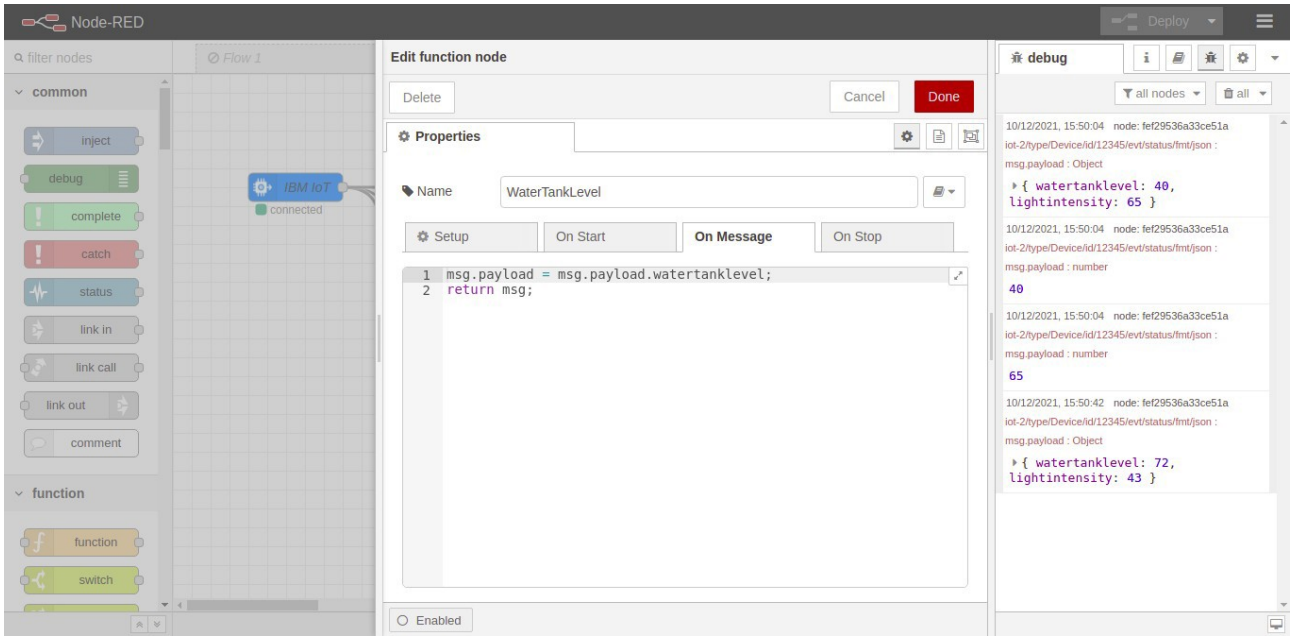
Python Code:

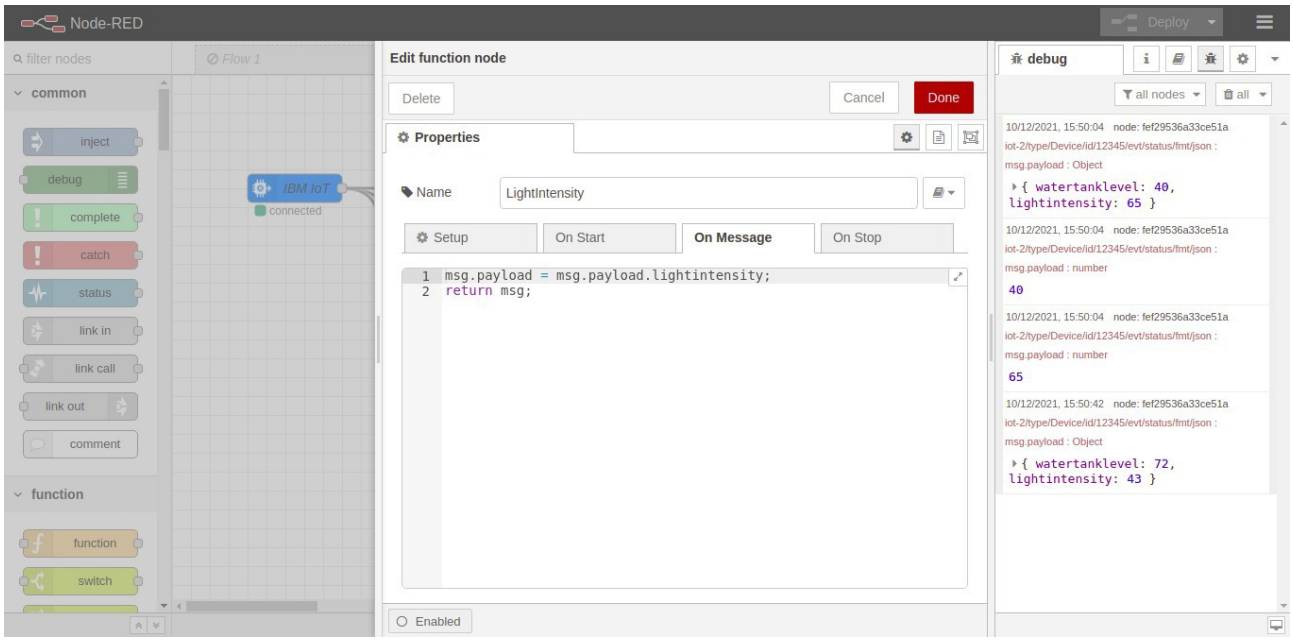
```
import wiotp.sdk.device
import time
import random

myConfig = {
   "identity": {
         "orgId": "asdfg",
         "typeId": "Device",
         "deviceId":"99999"
         },
   "auth": {
         "token": "99999999"
         }
}

def myCommandCallback(cmd):
         print(
            "Message received. Here’s the relevant information: {0}".format(
              cmd.data['command']
            )
         )

client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandlers=None)
client.connect()

i = 0
try:
         while i < 4:
           i += 1
           keyIp = input('\nPress [Enter] to continue or [q]  to quit: ')
           print('')
           if (keyIp == 'q'):
              break
           myData={
                 'watertanklevel': random.randint(0,100),
                 'lightintensity':random.randint(0,100),
           }
```

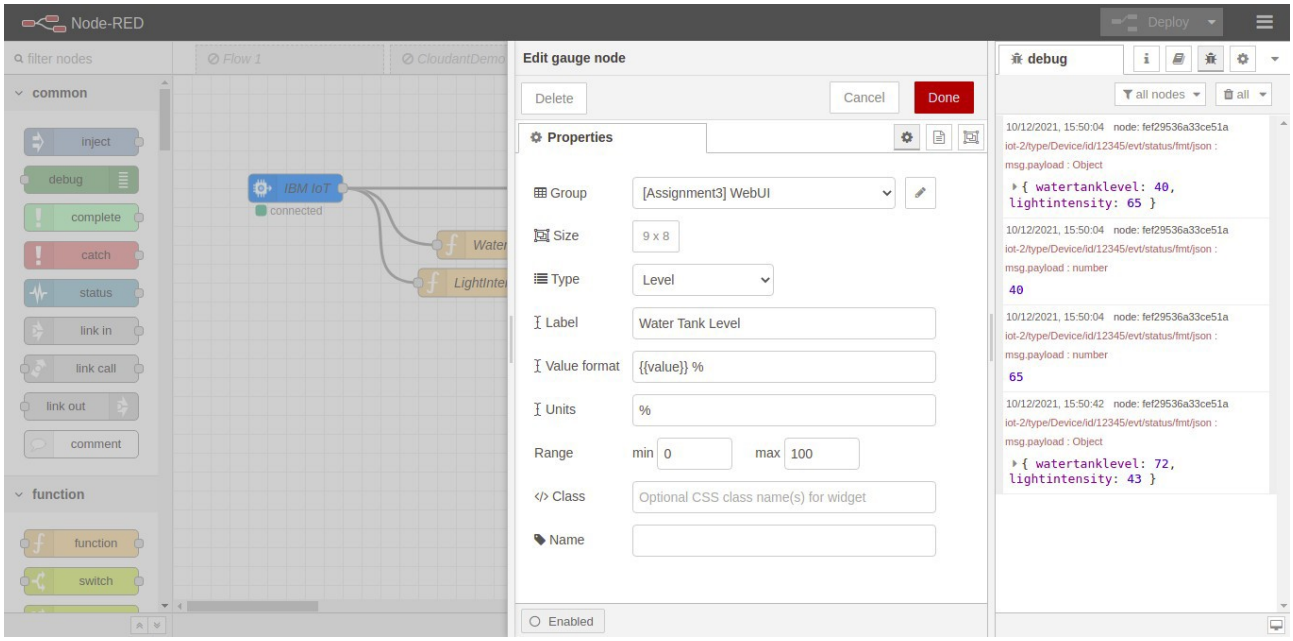
```
        client.publishEvent(
            eventId="status",
            msgFormat="json",
            data=myData,
            qos=0,
            onPublish=None,
        )

            print("Published data successfully: {0}".format(myData))
            client.commandCallback = myCommandCallback
            time.sleep(2)
            print('Exiting ...\n')
            except KeyboardInterrupt:
            print('Exiting ...\n')

client.disconnect()
```

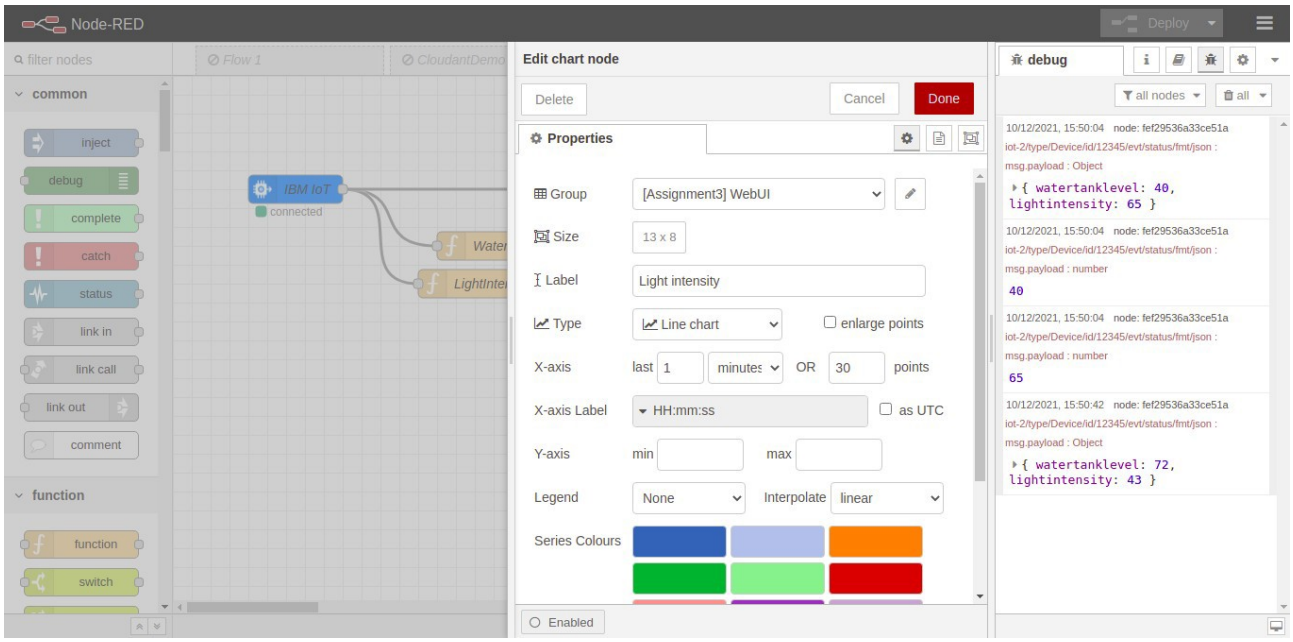
Sceenshots of working :




Node-RED
Deploy
filter nodes
Flow 1
common
inject
debug
complete
catch
status
link in
link call
link out
comment
function
function
switch
IBM IoT
connected
Edit function node
Delete
Cancel
Done
Properties
Name
WaterTankLevel
Setup
On Start
On Message
On Stop
1 msg.payload = msg.payload.watertanklevel;
2 return msg;
Enabled
debug
all nodes
all
10/12/2021, 15:50:04 node: fef29536a33ce51a
iot-2/type/Device/id/12345/evt/status/fmt/json :
msg.payload : Object
{ watertanklevel: 40, lightintensity: 65 }
10/12/2021, 15:50:04 node: fef29536a33ce51a
iot-2/type/Device/id/12345/evt/status/fmt/json :
msg.payload : number
40
10/12/2021, 15:50:04 node: fef29536a33ce51a
iot-2/type/Device/id/12345/evt/status/fmt/json :
msg.payload : number
65
10/12/2021, 15:50:42 node: fef29536a33ce51a
iot-2/type/Device/id/12345/evt/status/fmt/json :
msg.payload : Object
{ watertanklevel: 72, lightintensity: 43 }


Node-RED
Deploy
filter nodes
Flow 1
common
inject
debug
complete
catch
status
link in
link call
link out
comment
function
function
switch
IBM IoT
connected
Edit function node
Delete
Cancel
Done
Properties
Name
LightIntensity
Setup
On Start
On Message
On Stop
1 msg.payload = msg.payload.lightintensity;
2 return msg;
Enabled
debug
all nodes
all
10/12/2021, 15:50:04 node: fef29536a33ce51a
iot-2/type/Device/id/12345/evt/status/fmt/json :
msg.payload : Object
{ watertanklevel: 40, lightintensity: 65 }
10/12/2021, 15:50:04 node: fef29536a33ce51a
iot-2/type/Device/id/12345/evt/status/fmt/json :
msg.payload : number
40
10/12/2021, 15:50:04 node: fef29536a33ce51a
iot-2/type/Device/id/12345/evt/status/fmt/json :
msg.payload : number
65
10/12/2021, 15:50:42 node: fef29536a33ce51a
iot-2/type/Device/id/12345/evt/status/fmt/json :
msg.payload : Object
{ watertanklevel: 72, lightintensity: 43 }


Node-RED
Deploy
filter nodes
Flow 1
CloudantDemo
common
inject
debug
complete
catch
status
link in
link call
link out
comment
function
function
switch
IBM IoT
connected
Edit gauge node
Delete
Cancel
Done
Properties
Group
[Assignment3] WebUI
Size
9 x 8
Type
Level
Label
Water Tank Level
Value format
{{value}} %
Units
%
Range
min 0
max 100
Class
Optional CSS class name(s) for widget
Name
Enabled
debug
all nodes
all
10/12/2021, 15:50:04 node: fef29536a33ce51a
iot-2/type/Device/id/12345/evt/status/fmt/json :
msg.payload : Object
{ watertanklevel: 40, lightintensity: 65 }
10/12/2021, 15:50:04 node: fef29536a33ce51a
iot-2/type/Device/id/12345/evt/status/fmt/json :
msg.payload : number
40
10/12/2021, 15:50:04 node: fef29536a33ce51a
iot-2/type/Device/id/12345/evt/status/fmt/json :
msg.payload : number
65
10/12/2021, 15:50:42 node: fef29536a33ce51a
iot-2/type/Device/id/12345/evt/status/fmt/json :
msg.payload : Object
{ watertanklevel: 72, lightintensity: 43 }


Node-RED
Deploy
filter nodes
Flow 1
CloudantDemo
common
inject
debug
complete
catch
status
link in
link call
link out
comment
function
function
switch
IBM IoT
connected
Edit chart node
Delete
Cancel
Done
Properties
Group
[Assignment3] WebUI
Size
13 x 8
Label
Light intensity
Type
Line chart
enlarge points
X-axis
last 1 minutes OR 30 points
X-axis Label
HH:mm:ss
as UTC
Y-axis
min
max
Legend
None
Interpolate
linear
Series Colours
Enabled
debug
all nodes
all
10/12/2021, 15:50:04 node: fef29536a33ce51a
iot-2/type/Device/id/12345/evt/status/fmt/json :
msg.payload : Object
{ watertanklevel: 40, lightintensity: 65 }
10/12/2021, 15:50:04 node: fef29536a33ce51a
iot-2/type/Device/id/12345/evt/status/fmt/json :
msg.payload : number
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10/12/2021, 15:50:04 node: fef29536a33ce51a
iot-2/type/Device/id/12345/evt/status/fmt/json :
msg.payload : number
65
10/12/2021, 15:50:42 node: fef29536a33ce51a
iot-2/type/Device/id/12345/evt/status/fmt/json :
msg.payload : Object
{ watertanklevel: 72, lightintensity: 43 }

And finally Visualisation in Web application: