**SPRINT-1**

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| Team ID | PNT2022TMID43975 |
| Project Name | IoT based smart crop protection for agriculture |

Import time import sys

import ibmiotf.application import ibmiotf.device

**PYTHON CODE**

organization = "7oyue9" deviceType = "ESP32\_Controller" deviceId = "BME280\_Sensor" authMethod = "use- token-auth" authToken = "12345678" def myCommandCallback(cmd):

print("Command received: %s" % cmd.data) if cmd.data['command'] == 'motoron':

print("Motor On IS RECEIVED")

elif cmd.data['command'] == 'motoroff': print("Motor Off IS RECEIVED")

if cmd.command == "setInterval": if 'interval' not in cmd.data:

print("Error - command is missing required information: 'interval'") else: interval = cmd.data['interval'] elif

cmd.command == "print": if 'message' not in cmd.data:

print("Error - command is missing required information: 'message'") else: output = cmd.data['message'] print(output)

try: deviceOptions = {"org": organization, "type": deviceType, "id": deviceId, "auth-method": authMethod, "authtoken": authToken}

deviceCli = ibmiotf.device.Client(deviceOptions) except Exception as e: print("Caught exception connecting device: %s" % str(e)) sys.exit()

deviceCli.connect() while True:

deviceCli.commandCallback = myCommandCallback deviceCli.disconnect()

Node Red Flow.json

[{

"id": "6a097760.653918",

"type": "tab",

"label": "IBMIOT(smart Agriculture)", "disabled": false,

"info": ""

}, {

"id": "4fdd8d20.76a9b4",

"type": "ibmiot in",

"z": "6a097760.653918",

"authentication": "apiKey", "apiKey": "233183d6.16ba7c", "inputType": "evt", "logicalInterface": "",

"ruleId": "",

"deviceId": "BME280\_Sensor", "applicationId": "",

"deviceType": "ESP32\_Controller", "eventType": "+", "commandType": "", "format":

"json",

"name": "IBM IoT", "service": "registered", "allDevices": "", "allApplications": "", "allDeviceTypes": "", "allLogicalInterfaces": "", "allEvents": true, "allCommands": "",

"allFormats": "", "qos": 0,

"x": 130,

"y": 440,

"wires": [

["8d0c40d3.848cd", "6aa78b4a.da3eb4", "5642999c.ed7868", "c396573b.e8d738"]

]

}, {

"id": "c396573b.e8d738",

"type": "debug",

"z": "6a097760.653918",

"name": "", "active": false, "tosidebar": true,

"console": false, "tostatus": false, "complete": "payload",

"targetType": "msg", "x": 770,

"y": 360,

"wires": []

}, {

"id": "8a49f2d5.e9d07", "type": "ui\_gauge",

"z": "6a097760.653918",

"name": "",

"group": "28e6141.0c047ec", "order": 0,

"width": "6",

"height": "4",

"gtype": "gage",

"title": "Humidity", "label": "%Percentage", "format": "{{value}}", "min": 0,

"max": "100",

"colors": ["#00b500", "#e6e600", "#ca3838"], "seg1": "",

"seg2": "", "x": 800,

"y": 540,

"wires": []

}, {

"id": "9e820fb2.1ded5", "type": "ui\_gauge",

"z": "6a097760.653918",

"name": "",

"group": "28e6141.0c047ec", "order": 0,

"width": "6",

"height": "4",

"gtype": "gage", "title": "Temperature", "label": "°C Celcius", "format": "{{value}}", "min": 0,

"max": "100",

"colors": ["#00b500", "#e6e600", "#ca3838"], "seg1": "",

"seg2": "", "x": 770,

"y": 660,

"wires": []

}, {

"id": "6aa78b4a.da3eb4",

"type": "function",

"z": "6a097760.653918",

"name": "Temperature",

"func": "msg.payload=msg.payload.d.temperature;\nreturn msg;", "outputs": 1, "noerr": 0,

"x": 410,

"y": 560,

"wires": [

["c396573b.e8d738", "9e820fb2.1ded5", "687d6f13.98f7c"]

]

}, {

"id": "8d0c40d3.848cd", "type": "function",

"z": "6a097760.653918",

"name": "Humidity",

"func": "msg.payload=msg.payload.d.humidity;\nreturn msg;", "outputs": 1,

"noerr": 0,

"x": 420,

"y": 500,

"wires": [

["c396573b.e8d738", "8a49f2d5.e9d07", "a4f00796.520788"]

]

}, {

"id": "5642999c.ed7868",

"type": "function",

"z": "6a097760.653918",

"name": "SoilMoisture",

"func": "msg.payload=msg.payload.d.objectTemp;\nreturn msg;", "outputs": 1,

"noerr": 0,

"x": 430,

"y": 440,

"wires": [

["c396573b.e8d738", "dad1ab68.86f798", "9888ac53.4a285"]

]

}, {

"id": "dad1ab68.86f798",

"type": "ui\_gauge",

"z": "6a097760.653918",

"name": "",

"group": "28e6141.0c047ec", "order": 2,

"width": "6",

"height": "4",

"gtype": "gage",

"title": "Soil Moisture", "label": "% Percentage", "format": "{{value}}", "min": 0,

"max": "100",

"colors": ["#00b500", "#e6e600", "#ca3838"], "seg1": "",

"seg2": "", "x": 810,

"y": 420,

"wires": []

}, {

"id": "9de2a117.06e1d", "type": "http request", "z": "6a097760.653918",

"name": "",

"method": "GET",

"ret": "obj", "paytoqs": false, "url":

["http://](http://api.openweathermap.org/data/2.5/weather?q=Ponda%2CIN&appid=c17ea9)a[pi.openweathermap.org/data/2.5/weather?q=Ponda,IN&appid=c17ea9](http://api.openweathermap.org/data/2.5/weather?q=Ponda%2CIN&appid=c17ea9) 9bbf41216723c2071ce90c3633",

"tls": "", "persist": false, "proxy": "",

"authType": "", "x": 510,

"y": 240,

"wires": [

["c396573b.e8d738", "91b4e81a.972888", "4bcf3c9.21fd4c4", "2c496973.5626d6", "3552343c.1a23ac"]

]

}, {

"id": "cbdf50d7.8bd57", "type": "inject", "z": "6a097760.653918",

"name": "",

"topic": "",

"payload": "", "payloadType": "date", "repeat": "5",

"crontab": "", "once": true, "onceDelay": "5",

"x": 150,

"y": 300,

"wires": [ ["9de2a117.06e1d"]

]

}, {

"id": "f8fb8426.88b758",

"type": "ibmiot out",

"z": "6a097760.653918",

"authentication": "apiKey",

"apiKey": "233183d6.16ba7c", "outputType": "cmd", "deviceId": "BME280\_Sensor",

"deviceType": "ESP32\_Controller", "eventCommandType": "command", "format": "json",

"data": "Data", "qos": 0,

"name": "IBM IoT", "service": "registered", "x": 560,

"y": 100,

"wires": []

}, {

"id": "2deb666d.10728a",

"type": "ui\_button",

"z": "6a097760.653918",

"name": "",

"group": "d251626d.10cec", "order": 2,

"width": 0,

"height": 0, "passthru": false, "label": "Motor on",

"tooltip": "", "color": "", "bgcolor": "",

"icon": "",

"payload": "{\"command\":\"motoron\"}", "payloadType": "json",

"topic": "", "x": 160,

"y": 60,

"wires": [

["f8fb8426.88b758", "c396573b.e8d738"]

]

}, {

"id": "154a1e0e.e80672",

"type": "ui\_button",

"z": "6a097760.653918",

"name": "",

"group": "d251626d.10cec", "order": 3,

"width": 0,

"height": 0, "passthru": false, "label": "Motoroff",

"tooltip": "",

"color": "",

"bgcolor": "",

"icon": "",

"payload": "{\"command\":\"motoroff\"}", "payloadType": "json",

"topic": "", "x": 160,

"y": 160,

"wires": [

["f8fb8426.88b758", "c396573b.e8d738"]

]

}, {

"id": "6329ceb0.9a74",

"type": "ui\_text",

"z": "6a097760.653918", "group": "a9434212.30379",

"order": 0,

"width": 0,

"height": 0, "name": "",

"label": "Temperature", "format": "{{msg.payload}}", "layout": "row-spread",

"x": 970,

"y": 140,

"wires": []

}, {

"id": "5d4cb33b.861edc",

"type": "ui\_text",

"z": "6a097760.653918", "group": "a9434212.30379",

"order": 1,

"width": 0,

"height": 0, "name": "",

"label": "Humidity", "format": "{{msg.payload}}", "layout": "row-spread",

"x": 980,

"y": 200,

"wires": []

}, {

"id": "d85fe3cc.9ca31", "type": "ui\_text",

"z": "6a097760.653918", "group": "a9434212.30379",

"order": 0,

"width": 0,

"height": 0, "name": "",

"label": "Region",

"format": "{{msg.payload}}", "layout": "row-spread",

"x": 980,

"y": 260,

"wires": []

}, {

"id": "e00de3f6.29978",

"type": "ui\_text",

"z": "6a097760.653918", "group": "a9434212.30379",

"order": 3,

"width": 0,

"height": 0, "name": "",

"label": "Weather Description", "format": "{{msg.payload}}", "layout": "row-spread",

"x": 1020,

"y": 320,

"wires": []

}, {

"id": "9888ac53.4a285", "type": "ui\_chart",

"z": "6a097760.653918",

"name": "",

"group": "309c8230.4f9bde", "order": 3,

"width": 0,

"height": 0,

"label": "Soil moisture", "chartType": "line",

"legend": "false",

"xformat": "HH:mm:ss", "interpolate": "linear",

"nodata": "", "dot": false,

"ymin": "",

"ymax": "", "removeOlder": 1, "removeOlderPoints": "",

"removeOlderUnit": "3600",

"cutout": 0, "useOneColor": false, "useUTC": false,

"colors": ["#1f77b4", "#aec7e8", "#ff7f0e", "#2ca02c", "#98df8a", "#d62728", "#ff9896", "#9467bd", "#c5b0d5"],

"useOldStyle": false, "outputs": 1,

"x": 820,

"y": 460,

"wires": [ []

]

}, {

"id": "a4f00796.520788",

"type": "ui\_chart",

"z": "6a097760.653918",

"name": "",

"group": "309c8230.4f9bde", "order": 4,

"width": 0,

"height": 0,

"label": "Humidity",

"chartType": "line",

"legend": "false",

"xformat": "HH:mm:ss", "interpolate": "linear", "nodata": "",

"dot": false, "ymin": "",

"ymax": "", "removeOlder": 1, "removeOlderPoints": "",

"removeOlderUnit": "3600",

"cutout": 0, "useOneColor": false, "useUTC": false,

"colors": ["#1f77b4", "#aec7e8", "#ff7f0e", "#2ca02c", "#98df8a", "#d62728", "#ff9896", "#9467bd", "#c5b0d5"],

"useOldStyle": false, "outputs": 1,

"x": 800,

"y": 580,

"wires": [ []

]

}, {

"id": "687d6f13.98f7c", "type": "ui\_chart",

"z": "6a097760.653918",

"name": "",

"group": "309c8230.4f9bde", "order": 5,

"width": 0,

"height": 0,

"label": "Temperature", "chartType": "line",

"legend": "false",

"xformat": "HH:mm:ss", "interpolate": "linear", "nodata": "",

"dot": false,

"ymin": "", "ymax":

"",

"removeOlder": 1, "removeOlderPoints": "", "removeOlderUnit": "3600",

"cutout": 0, "useOneColor": false, "useUTC": false,

"colors": ["#1f77b4", "#aec7e8", "#ff7f0e", "#2ca02c", "#98df8a", "#d62728", "#ff9896", "#9467bd", "#c5b0d5"],

"useOldStyle": false, "outputs": 1,

"x": 810,

"y": 700,

"wires": [ []

]

}, {

"id": "91b4e81a.972888",

"type": "change",

"z": "6a097760.653918",

"name": "Temperature", "rules": [{

"t": "set",

"p": "payload",

"pt": "msg",

"to": "payload.main.temp", "tot": "msg"

}],

"action": "",

"property": "",

"from": "",

"to": "",

"reg": false,

"x": 750,

"y": 120,

"wires": [ ["6329ceb0.9a74"]

]

}, {

"id": "4bcf3c9.21fd4c4",

"type": "change",

"z": "6a097760.653918",

"name": "Humidity",

"rules": [{

"t": "set",

"p": "payload",

"pt": "msg",

"to": "payload.main.humidity", "tot": "msg"

}],

"action": "",

"property": "",

"from": "",

"to": "",

"reg": false,

"x": 740,

"y": 180,

"wires": [ ["5d4cb33b.861edc"]

]

}, {

"id": "2c496973.5626d6",

"type": "change",

"z": "6a097760.653918",

"name": "Region",

"rules": [{

"t": "set",

"p": "payload",

"pt": "msg",

"to": "payload.name",

"tot": "msg"

}],

"action": "",

"property": "",

"from": "",

"to": "",

"reg": false,

"x": 740,

"y": 240,

"wires": [ ["d85fe3cc.9ca31"]

]

}, {

"id": "3552343c.1a23ac",

"type": "change",

"z": "6a097760.653918",

"name": "Weather Description", "rules": [{

"t": "set",

"p": "payload",

"pt": "msg",

"to": "payload.weather.0.description", "tot": "msg"

}],

"action": "",

"property": "",

"from": "",

"to": "",

"reg": false,

"x": 780,

"y": 300,

"wires": [ ["e00de3f6.29978"]

]

}, {

"id": "233183d6.16ba7c",

"type": "ibmiot",

"z": "",

"name": "",

"keepalive": "60",

"serverName": "", "cleansession": true, "appId": "", "shared": false

}, {

"id": "28e6141.0c047ec",

"type": "ui\_group",

"z": "",

"name": "Smart Agriculture", "tab": "d669ffca.1402d", "order": 6,

"disp": true, "width": "6", "collapse": false

}, {

"id": "d251626d.10cec",

"type": "ui\_group",

"z": "",

"name": "Motor Commands", "tab": "d669ffca.1402d", "order": 1,

"disp": true, "width": "6", "collapse": false

}, {

"id": "a9434212.30379",

"type": "ui\_group",

"z": "",

"name": "Weather Forecast", "tab": "d669ffca.1402d", "order": 3,

"disp": true, "width": "6", "collapse": false

}, {

"id": "309c8230.4f9bde",

"type": "ui\_group",

"z": "",

"name": "Graphical Representation", "tab": "d669ffca.1402d",

"order": 5,

"disp": true, "width": "6", "collapse": false

}, {

"id": "d669ffca.1402d",

"type": "ui\_tab",

"z": "",

"name": "Smart Agriculture", "icon": "dashboard", "disabled": false,

"hidden": false

}]