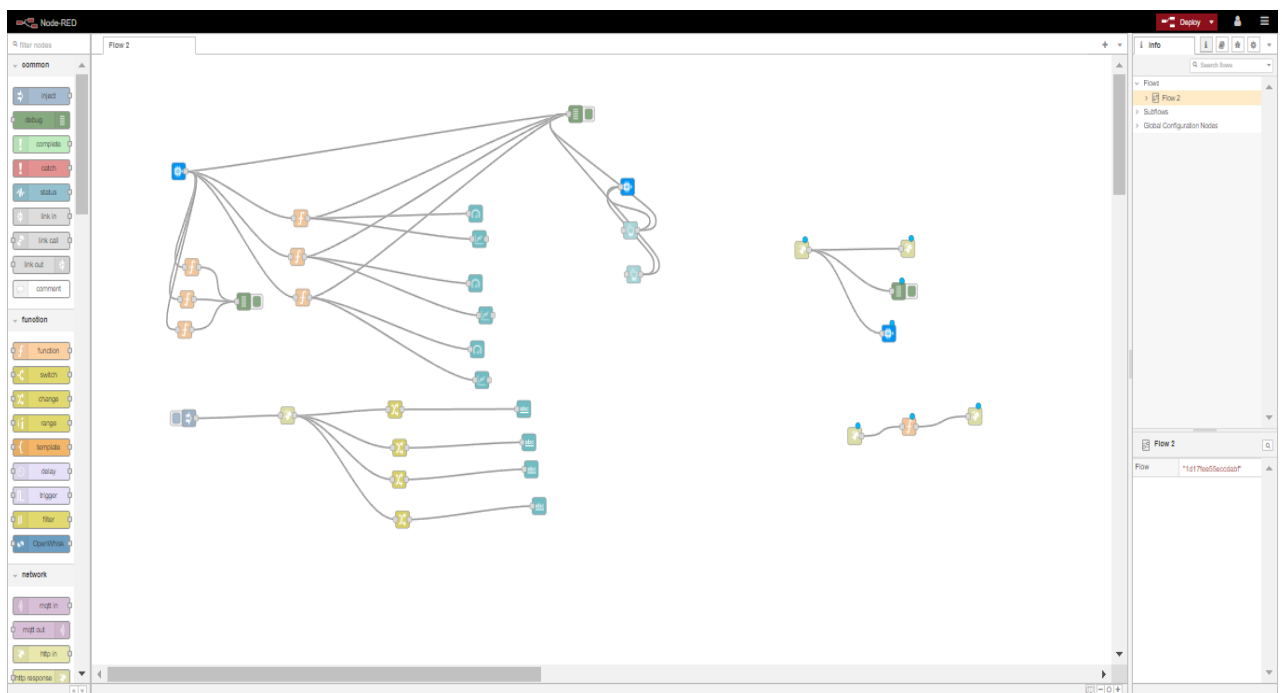


SPRINT 4

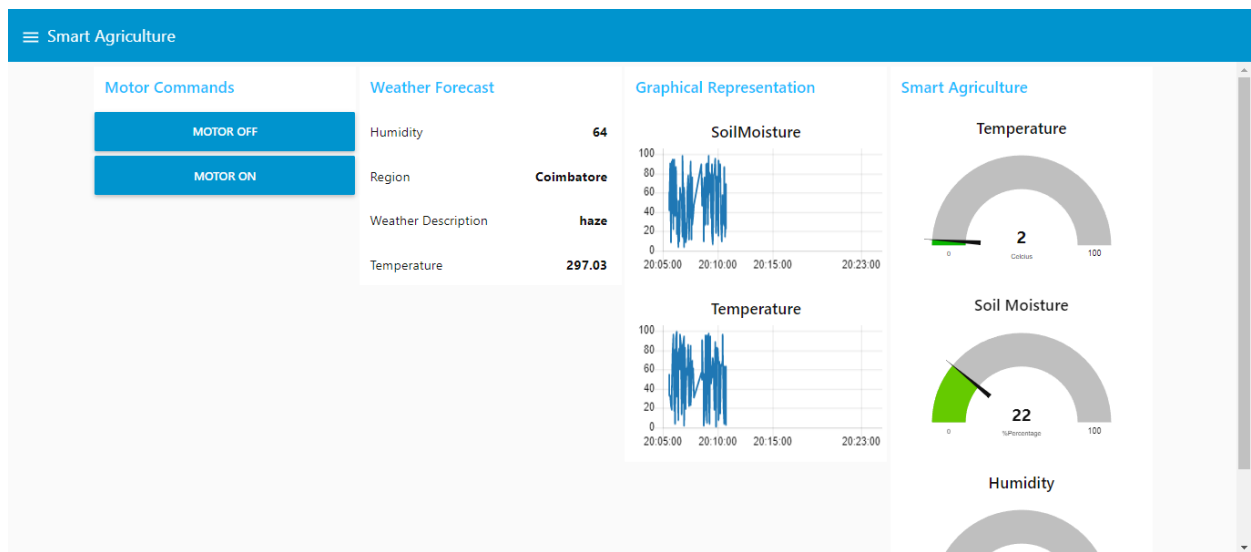
DEVELOPING WEB UI WITH USER INTERACTION

- For user interaction some extra nodes were created for web ui as well as MIT app inventor.

1. NODERED SERVICE WITH ADDED NODES:



2. RESULTING WEB UI:



3. APPENDIX:

JSON CODE OF BUILDING BLOCKS OF NODERED

```
[{"id":"1d17fee55eccdabf","type":"tab","label":"Flow 2","disabled":false,"info":"","env":[]},{id:"3ed81575b9a7a432","type":"ibmiot in","z":"1d17fee55eccdabf","authentication":"apiKey","apiKey":"229144b14fd6ffc9","inputType":"evt","logicalInterface":"","ruleId":"","deviceId":"","applicationId":"","deviceType":"+","eventType":"+","commandType":"","format":"json","name":"IBM IoT","service":"registered","allDevices":true,"allApplications":"","allDeviceTypes":true,"allLogicalInterfaces":"","allEvents":true,"allCommands":"","allFormats":"","qos":0,"x":187.00001335144043,"y":203.0000343322754,"wires":[["c3a09c9a3d457ae5","6649d8762181e6df","573044acb873599a","12e5bfaa6d8bdb94","daa6c44a8ec6c715","5d5769a5475664e4","30e4cf8de6c84be6"]],l:false},{id:"c3a09c9a3d457ae5","type":"debug","z":"1d17fee55eccdabf","name":"","active":true,"tosidebar":true,"console":false,"tostatus":false,"complete":false}
```

```
, "statusVal": "", "statusType": "auto", "x": 1040.3264780044556, "y": 103.17362785339355, "wires": [], "l": false }, { "id": "6649d8762181e6df", "type": "function", "z": "1d17fee55eccdabf", "name": "humidity", "func": "msg.payload=msg.payload.humidity\nreturn msg;", "outputs": 1, "noerr": 0, "initialize": "", "finalize": "", "libs": [], "x": 449.3333282470703, "y": 284.9062580078125, "wires": [ [ "c3a09c9a3d457ae5", "40c61a51f2ce9920", "5bfbbc660ac5a9f8" ] ], "l": false }, { "id": "573044acb873599a", "type": "function", "z": "1d17fee55eccdabf", "name": "temperature", "func": "msg.payload=msg.payload.temperature\nreturn msg;", "outputs": 1, "noerr": 0, "initialize": "", "finalize": "", "libs": [], "x": 442.33680725097656, "y": 351.90277900390623, "wires": [ [ "c3a09c9a3d457ae5", "c7c7ed23034c4daf", "b88cd758d46f69fc" ] ], "l": false }, { "id": "12e5bfaa6d8bdb94", "type": "function", "z": "1d17fee55eccdabf", "name": "", "func": "msg.payload=msg.payload.objectTemp\nreturn msg;", "outputs": 1, "noerr": 0, "initialize": "", "finalize": "", "libs": [], "x": 453.32643127441406, "y": 422.90973701171873, "wires": [ [ "c3a09c9a3d457ae5", "10f6ca02863cae39", "69804635c736f906" ] ], "l": false }, { "id": "40c61a51f2ce9920", "type": "ui_gauge", "z": "1d17fee55eccdabf", "name": "", "group": "872ba23cd23bbf56", "order": 0, "width": "6", "height": "4", "gtype": "gage", "title": "Humidity", "label": "%Percentage", "format": "{{ value }}", "min": 0, "max": "100", "colors": [ "#00b500", "#e6e600", "#ca3838" ], "seg1": "", "seg2": "", "className": "", "x": 825.3403472900391, "y": 276.76389350585936, "wires": [], "l": false }, { "id": "5bfbbc660ac5a9f8", "type": "ui_chart", "z": "1d17fee55eccdabf", "name": "", "group": "640d1d7a7fd4465a", "order": 3, "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" ], "outputs": 1, "useDifferentColor": false, "className": "", "x": 833.3264312744141, "y": 320.96527900390623, "wires": [ [ ] ], "l": false }, { "id": "c7c7ed23034c4daf", "type": "ui_gauge", "z": "1d17fee55eccdabf", "name": "", "group": "872ba23cd23bbf56", "order": 1, "width": "6", "height": "4", "gtype": "gage", "title": "Temperature", "label": "Celcius", "format": "{{ value }}", "min": 0, "max": "100", "colors": [ "#00b500", "#e6e600", "#ca3838" ], "seg1": "", "seg2": "", "className": "", "x": 825.0000305175781, "y": 398.00000762939453, "wires": [], "l": false }, { "id": "b88cd758d46f69fc", "type": "ui_chart", "z": "1d17fee55eccdabf", "name": "", "group": "25b81476626ad7f2", "order": 0, "width": 0, "height": 0, "label": "Temperature", "chartType": "line", "leg
```

end": "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"], "outputs": 1, "useDifferentColor": false, "className": "", "x": 847.0000305175781, "y": 453.66666412353516, "wires": [[], {"l": false}, {"id": "10f6ca02863cae39", "type": "ui_gauge", "z": "1d17fee55eccdabf", "name": "", "group": "872ba23cd23bbf56", "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": "", "className": "", "x": 829.0000305175781, "y": 513.0000381469727, "wires": [], {"l": false}, {"id": "69804635c736f906", "type": "ui_chart", "z": "1d17fee55eccdabf", "name": "", "group": "25b81476626ad7f2", "order": 1, "width": 0, "height": 0, "label": "SoilMoisture", "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"], "outputs": 1, "useDifferentColor": false, "className": "", "x": 839.0000305175781, "y": 566.6666641235352, "wires": [[], {"l": false}, {"id": "f4f731264e069c43", "type": "inject", "z": "1d17fee55eccdabf", "name": "", "props": [{"p": "payload"}, {"p": "topic", "vt": "str"}], "repeat": "", "crontab": "", "once": true, "onceDelay": 5, "topic": "", "payload": "", "payloadType": "date", "x": 209, "y": 633.0000381469727, "wires": [{"3920e3c5931c2675"}, {"l": false}, {"id": "3920e3c5931c2675", "type": "http request", "z": "1d17fee55eccdabf", "name": "", "method": "GET", "ret": "obj", "payload": "ignore", "url": "http://api.openweathermap.org/data/2.5/weather?q=coimbatore,IN&appid=c17ea99bbf41216723c2071ce90c3633", "tls": "", "persist": false, "proxy": "", "authType": "", "senderr": false, "x": 421.0000305175781, "y": 628.3333511352539, "wires": [{"315fc9d1d9ad4031"}, {"448ec6cd80ecd155"}, {"8b2f4d1716c4ced5"}, {"4d0dfbe21757ce68"}], {"l": false}, {"id": "315fc9d1d9ad4031", "type": "change", "z": "1d17fee55eccdabf", "name": "Temperature", "rules": [{"t": "set", "p": "payload", "pt": "msg", "to": "payload.main.temp", "tot": "msg"}], "action": "", "property": "", "from": "", "to": "", "reg": false, "x": 652.0000305175781, "y": 617.6666641235352, "wires": [{"b84b6c36f773f247"}], {"l": false}, {"id": "448ec6cd80ecd155", "type": "change", "z": "1d17fee55eccdabf", "name": "Humidity", "rules": [{"t": "set", "p": "payload", "pt": "msg", "to": "payload.main.humidity", "tot": "msg"}], "action": "", "property": "", "from": "", "to": "", "reg": false, "x": 662.0000305175781, "y": 684.666664

1235352,"wires":[[{"64e0f3d58b3dfb7c"}],{"l":false},{ "id":"8b2f4d1716c4ced5",
"type":"change","z":"1d17fee55eccdabf","name":"Region","rules":[{"t":"set","p
":"payload","pt":"msg","to":"payload.name","tot":"msg"}],"action":"","property
":"","from":"","to":"","reg":false,"x":661.0000305175781,"y":739.6666641235
352,"wires":[[{"9f83578f4bda5b65"}],{"l":false},{ "id":"4d0dfbe21757ce68","type
":"change","z":"1d17fee55eccdabf","name":"Weather
Description","rules":[{"t":"set","p":"payload","pt":"msg","to":"payload.weather
.0.description","tot":"msg"}],"action":"","property":"","from":"","to":"","reg":fa
lse,"x":668.0000305175781,"y":809.3333358764648,"wires":[[{"b9720f26f7149
0eb"}],{"l":false},{ "id":"b84b6c36f773f247","type":"ui_text","z":"1d17fee55ecc
dabf","group":"8d124f3d802281f1","order":0,"width":0,"height":0,"name":"","l
abel":"Temperature","format":"{ { msg.payload } }","layout":"row-
spread","className":"","x":929.0000305175781,"y":617.0000228881836,"wire
s":[],"l":false},{ "id":"64e0f3d58b3dfb7c","type":"ui_text","z":"1d17fee55eccda
bf","group":"8d124f3d802281f1","order":1,"width":0,"height":0,"name":"","lab
el":"Humidity","format":"{ { msg.payload } }","layout":"row-
spread","className":"","x":940.0000305175781,"y":675.0000228881836,"wire
s":[],"l":false},{ "id":"9f83578f4bda5b65","type":"ui_text","z":"1d17fee55eccda
bf","group":"8d124f3d802281f1","order":2,"width":0,"height":0,"name":"","lab
el":"Region","format":"{ { msg.payload } }","layout":"row-
spread","className":"","x":945.0000305175781,"y":722.0000228881836,"wire
s":[],"l":false},{ "id":"b9720f26f71490eb","type":"ui_text","z":"1d17fee55eccda
bf","group":"8d124f3d802281f1","order":3,"width":0,"height":0,"name":"","lab
el":"Weather Description","format":"{ { msg.payload } }","layout":"row-
spread","className":"","x":962.0000305175781,"y":786.0000228881836,"wire
s":[],"l":false},{ "id":"2420713a60ac353a","type":"ibmiot
out","z":"1d17fee55eccdabf","authentication":"apiKey","apiKey":"229144b14f
d6ffc9","outputType":"cmd","deviceId":"123456","deviceType":"ESP32","even
tCommandType":"command","format":"json","data":"data","qos":0,"name":"IB
M
IoT","service":"registered","x":1152.0000305175781,"y":230.00000762939453,
"wires":[],"l":false},{ "id":"37641f3e8d495024","type":"ui_button","z":"1d17fe
e55eccdabf","name":"","group":"42ac2c909b65c116","order":0,"width":0,"heig
ht":0,"passthru":false,"label":"Motor
On","tooltip":"","color":"","bgcolor":"","className":"","icon":"","payload":"{\n
"command":"motoron"}","payloadType":"json","topic":"topic","topicType":"
msg","x":1157.9999923706055,"y":305.6666660308838,"wires":[[{"2420713a6

```

0ac353a","c3a09c9a3d457ae5"]],{"l":false},{ "id":"513059b82caed056","type":"
ui_button","z":"1d17fee55eccdabf","name":"","group":"42ac2c909b65c116","o
rder":1,"width":0,"height":0,"passthru":false,"label":"Motor
Off","tooltip":"","color":"","bgcolor":"","className":"","icon":"","payload":{"\
"command\":"motoroff"},"payloadType":"json","topic":"topic","topicType":"
msg","x":1165.0000305175781,"y":382.66666412353516,"wires":[["2420713a
60ac353a","c3a09c9a3d457ae5"]],{"l":false},{ "id":"f37cb2ef4b093fb1","type":"
function","z":"1d17fee55eccdabf","name":"","func":"msg.payload={\"temperat
ure\":global.get(\"t\"),\"humidity\":global.get(\"h\"),\"objectTemp\":global.get(\"
o\")}\nreturn
msg;","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[,"x":1757.00006
10351562,"y":647.6666870117188,"wires":[["0355f25e5b2b3bd4"]],{"l":false},
{ "id":"3fbf11817cb86f07","type":"http
in","z":"1d17fee55eccdabf","name":"","url":"command","method":"get","uploa
d":false,"swaggerDoc":"","x":1526.6666564941406,"y":340,"wires":[["ce9e263
354b573c0","f14100f311e4646c","ef19c39305561507"]],{"l":false},{ "id":"ce9e
263354b573c0","type":"http
response","z":"1d17fee55eccdabf","name":"","statusCode":"","headers":{"x":
1754.6666870117188,"y":337.6666259765625,"wires":[],"l":false},{ "id":"f141
00f311e4646c","type":"debug","z":"1d17fee55eccdabf","name":"","active":true
,"tosidebar":true,"console":false,"tostatus":false,"complete":"payload","targetTy
pe":"msg","statusVal":"","statusType":"auto","x":1734.6666870117188,"y":411
.6666259765625,"wires":[],"l":false},{ "id":"ef19c39305561507","type":"ibmiot
out","z":"1d17fee55eccdabf","authentication":"apiKey","apiKey":"229144b14f
d6ffc9","outputType":"evt","deviceId":"123456","deviceType":"ESP32","event
CommandType":"command","format":"json","data":"data","qos":0,"name":"IB
M
IoT","service":"registered","x":1713.6668090820312,"y":485.333251953125,"
wires":[],"l":false},{ "id":"daa6c44a8ec6c715","type":"function","z":"1d17fee55
eccdabf","name":"","func":"msg.payload=msg.payload.humidity\nglobal.set(\"h
\",msg.payload)\nreturn
msg;","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[,"x":215,"y":370
.00000762939453,"wires":[["e74fdef0b1d88ed9"]],{"l":false},{ "id":"5d5769a54
75664e4","type":"function","z":"1d17fee55eccdabf","name":"","func":"msg.pay
load=msg.payload.temperature\nglobal.set(\"t\",msg.payload)\nreturn
msg;","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[,"x":205,"y":426
.00000762939453,"wires":[["e74fdef0b1d88ed9"]],{"l":false},{ "id":"30e4cf8de6

```

```
c84be6","type":"function","z":"1d17fee55eccdabf","name":"","func":"msg.payload=msg.payload.objectTemp\nnglobal.set(\\\"o\\\",msg.payload)\n\nreturn msg;","outputs":1,"noerr":0,"initialize":"","finalize":"","libs":[],"x":200,"y":479.00000762939453,"wires":[["e74fdef0b1d88ed9"]],"l":false},{ "id":"e74fdef0b1d88ed9","type":"debug","z":"1d17fee55eccdabf","name":"","active":true,"tosidebar":true,"console":false,"tostatus":false,"complete":"false","statusVal":"","statusType":"auto","x":327,"y":429.66666412353516,"wires":[],"l":false},{ "id":"d954668ed80f8a19","type":"httpin","z":"1d17fee55eccdabf","name":"","url":"/sensor","method":"get","upload":false,"swaggerDoc":"","x":1640,"y":664.0000610351562,"wires":[["f37cb2ef4b093fb1"]],"l":false},{ "id":"0355f25e5b2b3bd4","type":"httpresponse","z":"1d17fee55eccdabf","name":"","statusCode":"","headers":{"x":1899.0000610351562,"y":629.6666870117188,"wires":[],"l":false},{ "id":"229144b14fd6ffc9","type":"ibmiot","name":"124567","keepalive":"60","serverName":"","cleansession":true,"appId":"","shared":false},{ "id":"872ba23cd23bbf56","type":"ui_group","name":"Smart Agriculture","tab":"39ddfc796ef24aea","order":6,"disp":true,"width":"6","collapse":false},{ "id":"640d1d7a7fd4465a","type":"ui_group","name":"Graphical Representation","tab":"efece160ad5a9aa8","order":5,"disp":true,"width":"6","collapse":false},{ "id":"25b81476626ad7f2","type":"ui_group","name":"Graphical Representation","tab":"39ddfc796ef24aea","order":5,"disp":true,"width":"6","collapse":false},{ "id":"8d124f3d802281f1","type":"ui_group","name":"Weather Forecast","tab":"39ddfc796ef24aea","order":3,"disp":true,"width":"6","collapse":false},{ "id":"42ac2c909b65c116","type":"ui_group","name":"Motor Commands","tab":"39ddfc796ef24aea","order":1,"disp":true,"width":"6","collapse":false},{ "id":"39ddfc796ef24aea","type":"ui_tab","name":"Smart Agriculture","icon":"dashboard","disabled":false,"hidden":false},{ "id":"efece160ad5a9aa8","type":"ui_tab","name":"Smart Agriculture","icon":"dashboard","disabled":false,"hidden":false}]}
```