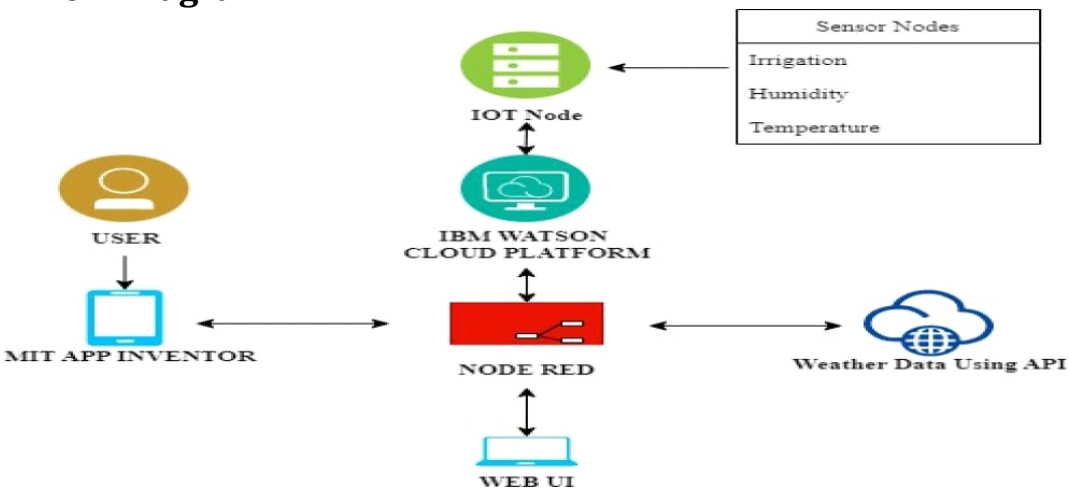
Project Development -Delivery of Sprint-4

Team ID	PNT2022TMID26366
Project Name	Project -Smart farmer-IOT enabled smart Farming Application

Flow Diagram



Python Code:

- **For Connecting IBM Cloud**
- **For NODE RED**
- **Weather Map Information**
- **MIT App Inventor**

#IBM Watson IOT

Platform #pip install

wiotp-sdk import

```
wiotp.sdk.device
import time

import random
import requests,
json


ms=0
# Enter your API key here
api_key =
"a0db30a689a774b93ffcb58ef2eddfda" #
base_url variable to store url
base_url = " HYPERLINK
"http://api.openweathermap.org/data/2.5/weather"http:
//api.openweathermap.org/data/2.5/weather?" # Give
city name
city_name = 'Chennai, IN'
# complete_url variable to
store # complete url
address
complete_url = base_url + "appid=" + api_key + "&q=" + city_name


status='moto
r off'
myConfig = {
```

```
    "identity": {
        "orgId":
        "17lsro",
        "typeId":
        "MyDeviceType",
        "deviceId":"12345"
    },
    "auth": {
        "token": "GkatKdiUS?UVHKvnAD"
    }
}
def myCommandCallback(cmd):
    print("Message received from IBM IoT Platform:
%s" % cmd.data['command'])
    m=cmd.data['command']
    if(m=="MOTOR ON"):#if motor
    is on
        print("MOTOR IS ON")
        global status
        status='moto
        r on'
        myData={'temperature':temp,
'humidity':hum,'soilmoisture':sm_percentage,'status':status,'api_temp
erature':
api_temperature,'api_pressure':api_pressure,'api_humidity':api_humid
ity,'api
_weather_description':api_weather_description}
```

```
        client.publishEvent(eventId="status", msgFormat="json",
data=myData, qos=0, onPublish=None)
        print("Published data Successfully: %s", myData)


        time.sleep(2)


    elif(m=="MOTOR OFF"):#if
        motor is off print("MOTOR IS
        OFF")

        status='motor off'

        myData={'temperature

        ':temp,

'humidity':hum,'soilmoisture':sm_percentage,'status':status,'api_temp
erature':
api_temperature,'api_pressure':api_pressure,'api_humidity':api_humid
ity,'api
_weather_description':api_weather_description}
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data=myData, qos=0, onPublish=None)
        print("Published data Successfully: %s", myData)


        time.sleep(2)
```

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

while True:
    # get method of requests
    module # return response
    object
    response =
    requests.get(complete_url) # json
    method of response object
    # convert json format
    data into # python format
    data
    x = response.json()
    # Now x contains list of nested
    dictionaries # Check the value of
    "cod" key is equal to # "404", means
    city is found otherwise,
    # city is not
    found if
    x["cod"] !=
    "404":
```

```
        y = x["main"]

        api_temperature = y["temp"]#getting api temperature data


        api_pressure = y["pressure"]#getting api pressure data


        api_humidity = y["humidity"] #getting api humidity data


        z = x["weather"]


        api_weather_description = z[0]["description"]#getting api
weather condition data


    temp=random.randint(-20,125)#geneating ranom values for
    temperature hum=random.randint(0,100)#geneating ranom
    values for humidity
    soilmoisture=random.randint(0,1023)#analog sensor
    sm_percentage=(soilmoisture/1023)*100
    sm_percentage=int(sm_percentage)#geneating ranom
values for soilmoisture
    myData={'temperature':temp,
'humidity':hum,'soilmoisture':sm_percentage,'status':status,'api_temper
```

```
ature':
api_temperature,'api_pressure':api_pressure,'api_humidity':api_humidit
y,'api
_weather_description':api_weather_description}

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

   print("Published   data   Successfully:   %s",

   myData)      client.commandCallback      =

   myCommandCallback time.sleep(2)


time.sleep(2)

client.disconnect()
```

```
File  Edit  Format  Run  Options  Window  Help
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#pip install wiotp-sdk
import wiotp.sdk.device
import time
import random
import requests, json

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# base_url variable to store url
base_url = "http://api.openweathermap.org/data/2.5/weather?"
# Give city name
city_name = 'Chennai, IN'
# complete_url variable to store
# complete_url address
complete_url = base_url + "appid=" + api_key + "&q=" + city_name

status='motor off'
myConfig = {
    "identity": {
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client.connect()

while True:
    # get method of requests module
    # return response object
    response = requests.get(complete_url)
    # json method of response object
    # convert json format data into
    # python format data
    x = response.json()
    # Now x contains list of nested dictionaries
    # Check the value of "cod" key is equal to
    # "404", means city is found otherwise,
    # city is not found
    if x["cod"] != "404":



        y = x["main"]


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```
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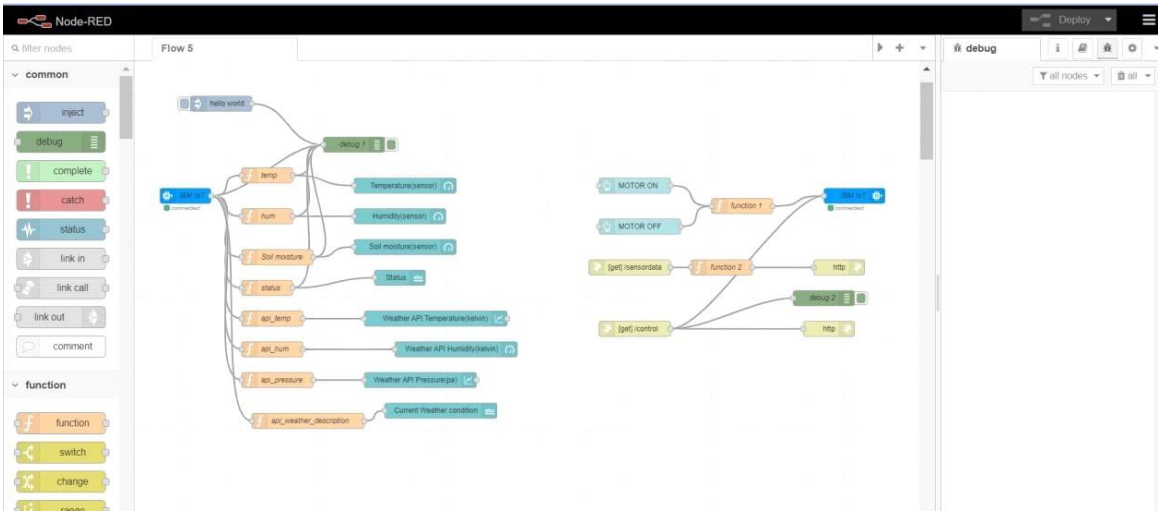
    sm_percentage=(soilmoisture/1023)*100
    sm_percentage=int(sm_percentage)#geneating ranom values for soilmoisture
    myData={'temperature':temp, 'humidity':hum,'soilmoisture':sm_percentage,'status':status,'api_temperature':api_temperature,'api_pressure':api_pressure,'ap
    client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0, onPublish=None)
    print("Published data Successfully: %s", myData)
    client.commandCallback = myCommandCallback
    time.sleep(2)

time.sleep(2)
client.disconnect()
```

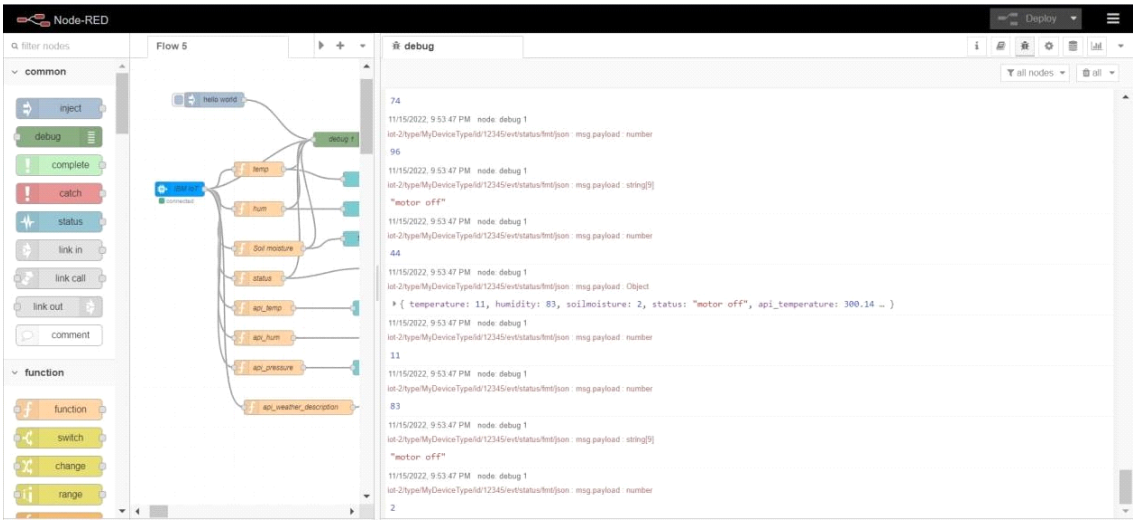
Running Module

NODE RED Flow Connections

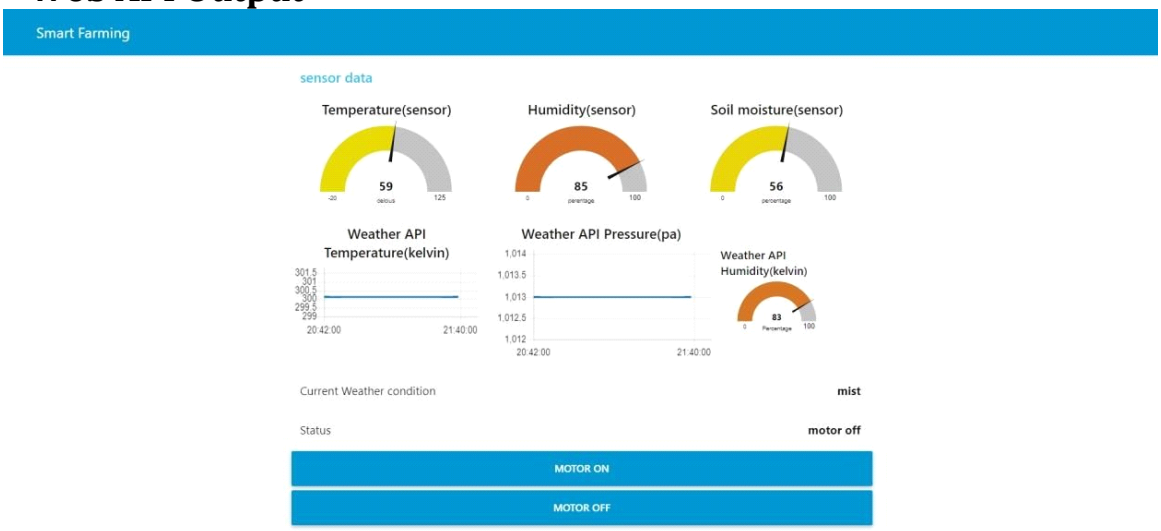
- **Interfacing IBM Cloud**
- **Intefacing & Getting Sensor Datas**
- **Connecting MIT App Inventor**
- **Weather Map Parameters**



Live Publish Data Output Of Node Red

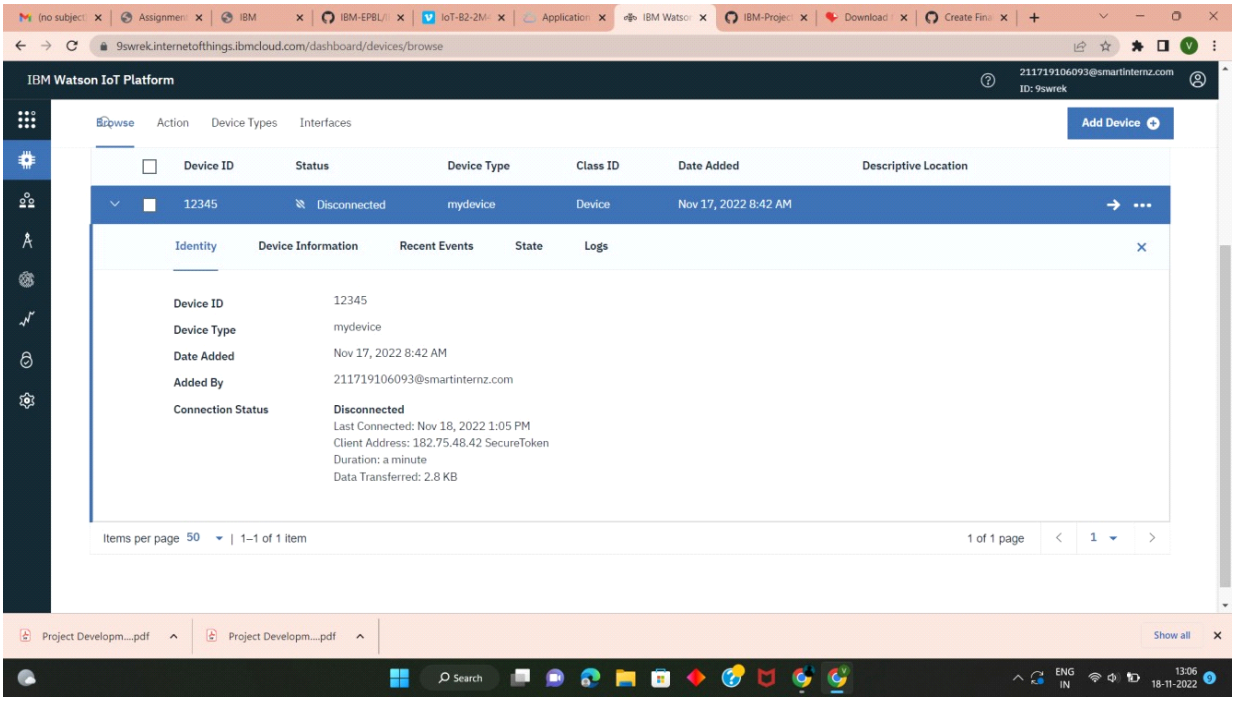


Web API Output



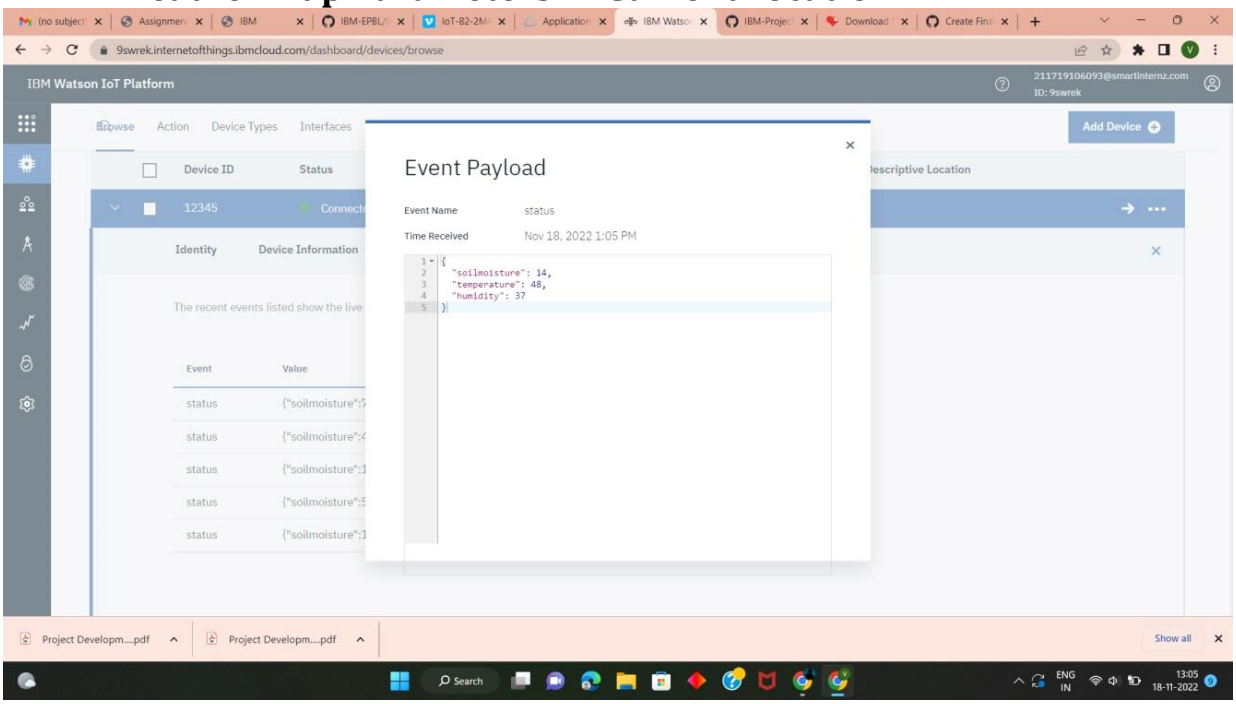
IBM Watson IoT Platform

- **Device Connected Details**



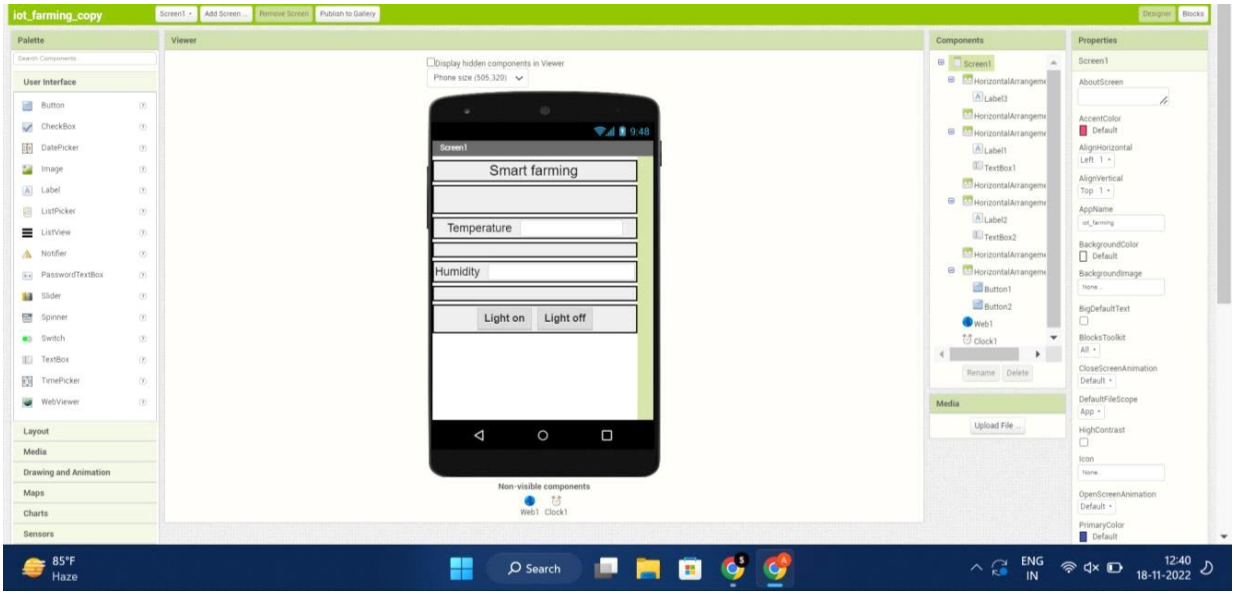
Live Date Output Of IBM Watson Iot Platform

- **Sensor Output Data**
- **Weather Condition**
- **Weather Map Parameters In Current Location**

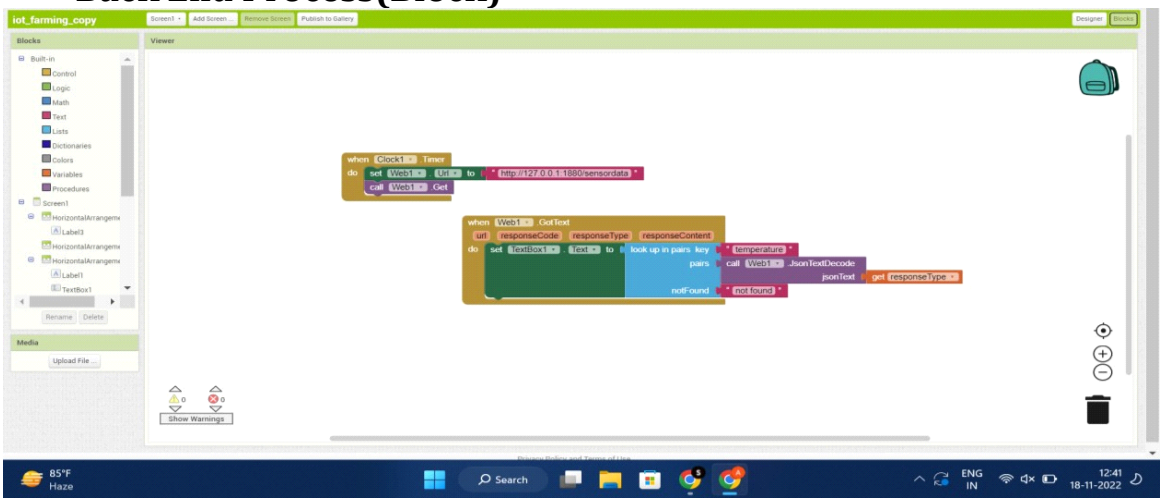


MIT APP INVENTOR

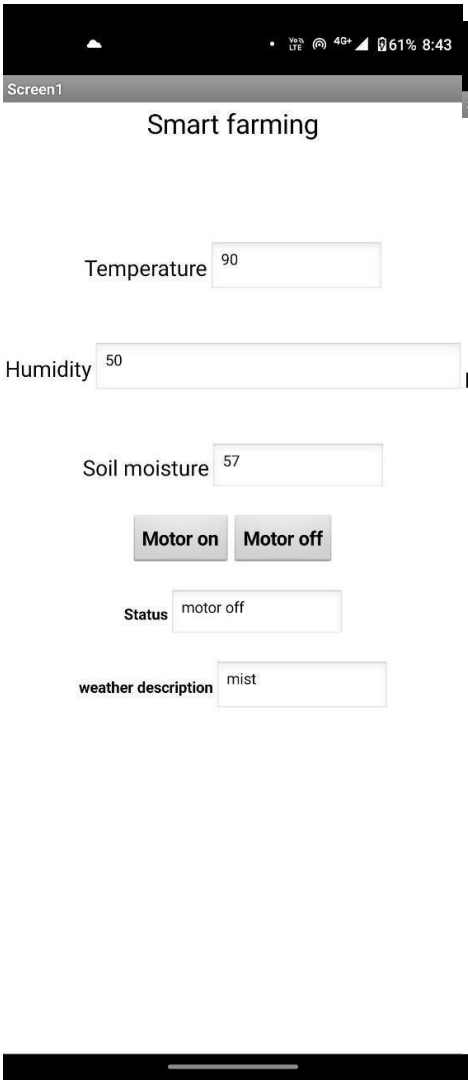
- **Design**

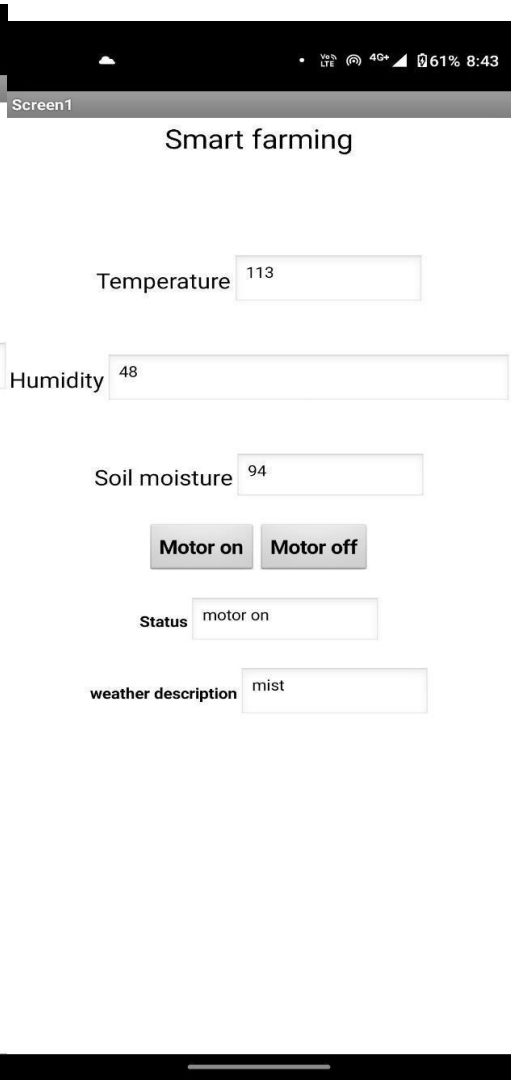


Back End Process(Block)



Mobile Application Ouput


61% 8:43
Screen1
Smart farming
Temperature
90
Humidity
50
Soil moisture
57
Motor on
Motor off
Status
motor off
weather description
mist


61% 8:43
Screen1
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Soil moisture
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Motor on
Motor off
Status
motor on
weather description
mist