Project Development

Delivery of Sprint - 4

Team ID	PNT2022TMID26519
Team Members	Monish Kumar V,Mohana Priya K, Swetha G,Sanjay Kumar V
Project Name	Project -Smart farmer-IOT enabled smart Farming Application

Flow Diagram
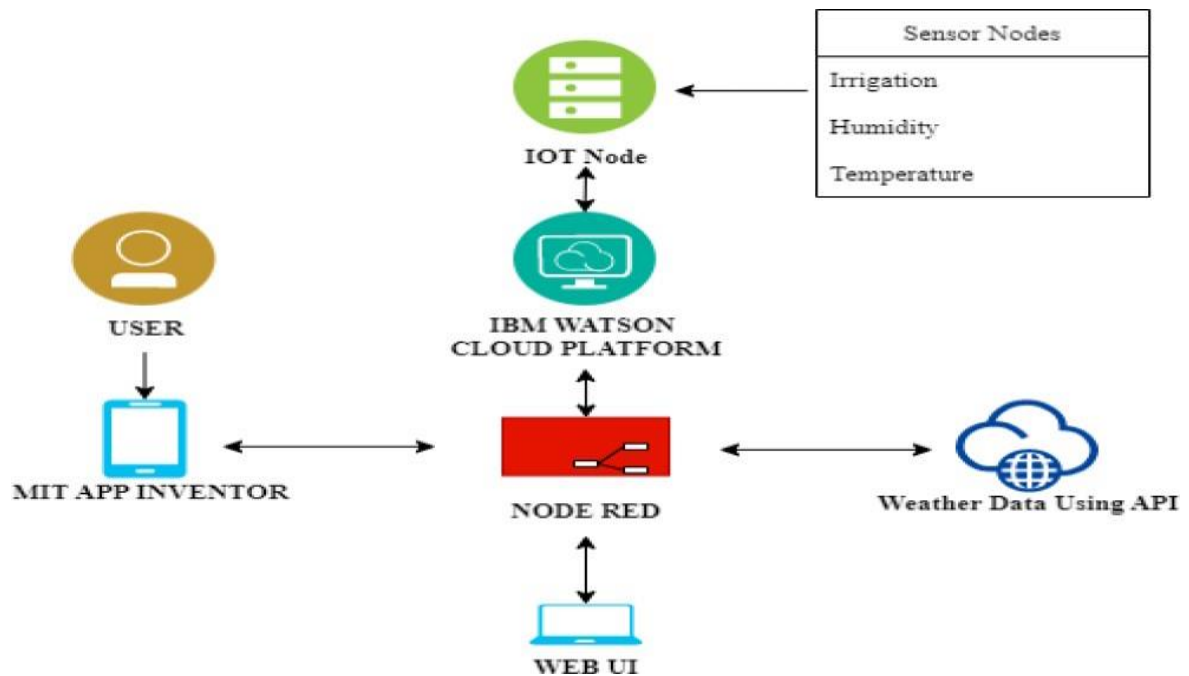
Python Code:
- For Connecting IBM Cloud
- For NODE RED
- Weather Map Information
- MIT App Inventor

Python Code:

```python
import wiotp.sdk.device
import time
import os
import datetime
import random
myconfig = {
   "identity": {
      "orgId": "ga4sjl",
      "typeId": "NodeMCU",
      "deviceId": "12345"
   },
   "auth": {
      "token": "CK2!+2FzgnyZFWE9yW"
      }
}
client = wiotp.sdk.device.DeviceClient(config=myconfig, logHandlers=None)
client.connect()
def myCommandCallback(cmd):
   print("Message received from IBM IoT platform: %s"  %
cmd.data['command'])
   m=cmd.data['command']
   if(m=="motoron"):
      print("motor is switched on")
   elif(m=="motoroff"):
      print("motor is switched OFF")
   print("  ")
while True:
   soil=random.randint(0,100)
   temp=random.randint(-20,125)
   hum=random.randint(0,100)
   myData={'soilmoisture':soil, 'temperature' :temp, 'humidity' :hum}
   client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0,
onPublish=None)
   print("Published data Successfully: %s", myData)
   time.sleep(2)
   client.myCommandCallback = myCommandCallback
client.disconnect ()
```

sanjay.py - C:\Users\B.SOMESHWARAN\Downloads\sanjay.py (3.8.10)

```python
import wiotp.sdk.device
import time
import os
import datetime
import random
myconfig = {
    "identity": {
        "orgId": "ga4sj1",
        "typeId": "NodeMCU",
        "deviceId": "12345"
    },
    "auth": {
        "token": "CK2!+2FzgnyZFWE9yW"
    }
}
client = wiotp.sdk.device.DeviceClient(config=myconfig, logHandlers=None)
client.connect()
def myCommandCallback(cmd):
    print("Message received from IBM IoT platform: %s"  % cmd.data['command'])
    m=cmd.data['command']
    if(m=="motoron"):
        print("motor is switched on")
    elif(m=="motoroff"):
        print("motor is switched OFF")
    print("  ")
while True:
    soil=random.randint(0,100)
    temp=random.randint(-20,125)
    hum=random.randint(0,100)
    myData={'soil_moisture':soil, 'temperature' :temp, 'humidity' :hum}
    client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0, onPublish=None)
    print("Published data Successfully: %s", myData)
    time.sleep(2)
    client.myCommandCallback = myCommandCallback
client.disconnect ()
```
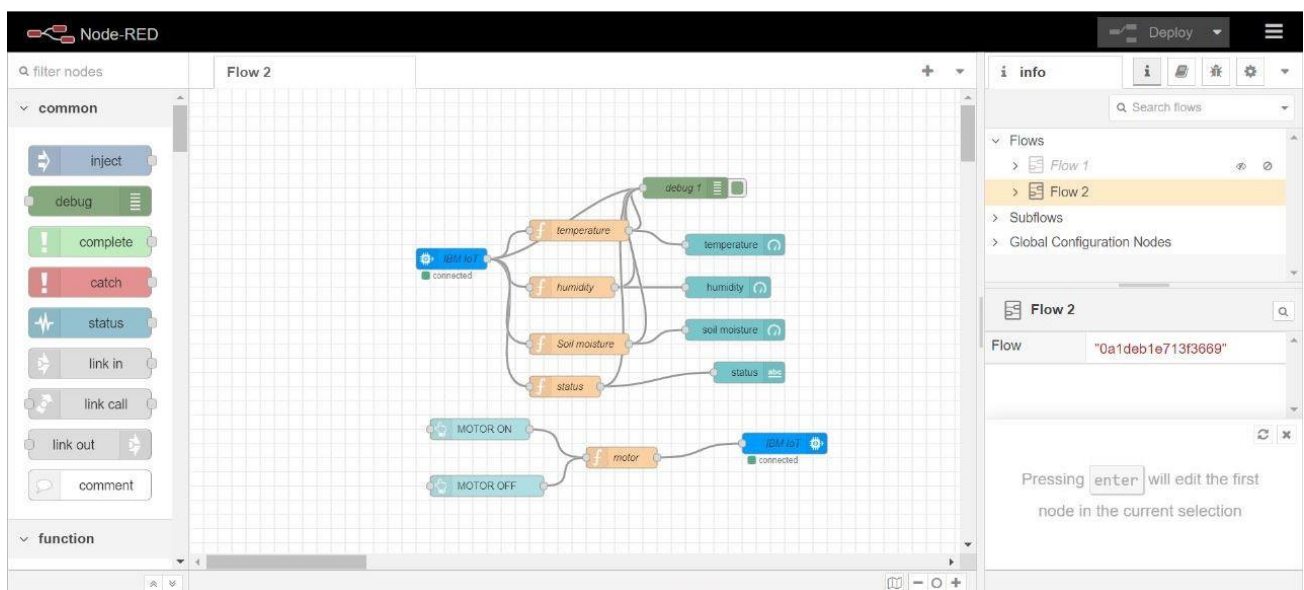
Running of programs :

IDLE Shell 3.8.10

```
Published data Successfully: %s {'soil_moisture': 74, 'temperature': 29, 'humidity': 98}
Published data Successfully: %s {'soil_moisture': 36, 'temperature': 7, 'humidity': 69}
Published data Successfully: %s {'soil_moisture': 20, 'temperature': 77, 'humidity': 56}
Published data Successfully: %s {'soil_moisture': 72, 'temperature': 103, 'humidity': 59}
Published data Successfully: %s {'soil_moisture': 77, 'temperature': -12, 'humidity': 12}
Published data Successfully: %s {'soil_moisture': 49, 'temperature': 46, 'humidity': 34}
Published data Successfully: %s {'soil_moisture': 13, 'temperature': 102, 'humidity': 29}
Published data Successfully: %s {'soil_moisture': 33, 'temperature': 12, 'humidity': 32}
Published data Successfully: %s {'soil_moisture': 47, 'temperature': 101, 'humidity': 86}
Published data Successfully: %s {'soil_moisture': 2, 'temperature': 94, 'humidity': 26}
Published data Successfully: %s {'soil_moisture': 81, 'temperature': 81, 'humidity': 73}
Published data Successfully: %s {'soil_moisture': 69, 'temperature': 18, 'humidity': 97}
Published data Successfully: %s {'soil_moisture': 96, 'temperature': 107, 'humidity': 20}
Published data Successfully: %s {'soil_moisture': 8, 'temperature': 84, 'humidity': 30}
Published data Successfully: %s {'soil_moisture': 77, 'temperature': 91, 'humidity': 99}
Published data Successfully: %s {'soil_moisture': 13, 'temperature': 78, 'humidity': 29}
Published data Successfully: %s {'soil_moisture': 0, 'temperature': 75, 'humidity': 26}
Published data Successfully: %s {'soil_moisture': 6, 'temperature': 105, 'humidity': 22}
Published data Successfully: %s {'soil_moisture': 72, 'temperature': 49, 'humidity': 16}
Published data Successfully: %s {'soil_moisture': 4, 'temperature': 113, 'humidity': 94}
Published data Successfully: %s {'soil_moisture': 14, 'temperature': 84, 'humidity': 82}
Published data Successfully: %s {'soil_moisture': 72, 'temperature': 20, 'humidity': 65}
Published data Successfully: %s {'soil_moisture': 73, 'temperature': 111, 'humidity': 58}
Published data Successfully: %s {'soil_moisture': 58, 'temperature': 97, 'humidity': 50}
Published data Successfully: %s {'soil_moisture': 48, 'temperature': -5, 'humidity': 62}
Published data Successfully: %s {'soil_moisture': 91, 'temperature': 107, 'humidity': 22}
Published data Successfully: %s {'soil_moisture': 39, 'temperature': 13, 'humidity': 83}
Published data Successfully: %s {'soil_moisture': 76, 'temperature': 38, 'humidity': 53}
Published data Successfully: %s {'soil_moisture': 43, 'temperature': 19, 'humidity': 17}
Published data Successfully: %s {'soil_moisture': 80, 'temperature': 118, 'humidity': 66}
Published data Successfully: %s {'soil_moisture': 93, 'temperature': -2, 'humidity': 6}
Published data Successfully: %s {'soil_moisture': 71, 'temperature': 19, 'humidity': 62}
Published data Successfully: %s {'soil_moisture': 45, 'temperature': 59, 'humidity': 84}
Published data Successfully: %s {'soil_moisture': 52, 'temperature': 101, 'humidity': 12}
Published data Successfully: %s {'soil_moisture': 33, 'temperature': 24, 'humidity': 74}
Published data Successfully: %s {'soil_moisture': 16, 'temperature': 11, 'humidity': 0}
Published data Successfully: %s {'soil_moisture': 93, 'temperature': 93, 'humidity': 59}
Published data Successfully: %s {'soil_moisture': 44, 'temperature': 96, 'humidity': 67}
Published data Successfully: %s {'soil_moisture': 54, 'temperature': 33, 'humidity': 52}
Published data Successfully: %s {'soil_moisture': 30, 'temperature': 73, 'humidity': 75}
```

NODE RED Flow Connections

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

Flow:1

Flow:1 Configuring All Nodes With IBM IOT Platform

Flow:2 Configuring All Nodes With IBM IOT Platform

Execution of Python Program

C:\Program Files\WindowsApps\PythonSoftwareFoundation.Python.3.8_3.8.2800.0_x64__qbz5n2kfra8p0\python3.8.exe

erature': 298.14, 'api_pressure': 1013, 'api_humidity': 94, 'api_weather_description': 'mist'}
Published data Successfully: %s {'temperature': 2, 'humidity': 93, 'soilmoisture': 52, 'status': 'motor off', 'api_tempe
rature': 298.14, 'api_pressure': 1013, 'api_humidity': 94, 'api_weather_description': 'mist'}
Published data Successfully: %s {'temperature': 100, 'humidity': 100, 'soilmoisture': 63, 'status': 'motor off', 'api_te
mperature': 298.14, 'api_pressure': 1013, 'api_humidity': 94, 'api_weather_description': 'mist'}
Published data Successfully: %s {'temperature': -3, 'humidity': 9, 'soilmoisture': 28, 'status': 'motor off', 'api_tempe
rature': 298.14, 'api_pressure': 1013, 'api_humidity': 94, 'api_weather_description': 'mist'}
Published data Successfully: %s {'temperature': 96, 'humidity': 93, 'soilmoisture': 24, 'status': 'motor off', 'api_temp
erature': 298.14, 'api_pressure': 1013, 'api_humidity': 94, 'api_weather_description': 'mist'}
Published data Successfully: %s {'temperature': -5, 'humidity': 64, 'soilmoisture': 99, 'status': 'motor off', 'api_temp
erature': 298.14, 'api_pressure': 1013, 'api_humidity': 94, 'api_weather_description': 'mist'}
Published data Successfully: %s {'temperature': 8, 'humidity': 40, 'soilmoisture': 24, 'status': 'motor off', 'api_tempe
rature': 298.14, 'api_pressure': 1013, 'api_humidity': 94, 'api_weather_description': 'mist'}
Published data Successfully: %s {'temperature': 15, 'humidity': 25, 'soilmoisture': 70, 'status': 'motor off', 'api_temp
erature': 298.14, 'api_pressure': 1013, 'api_humidity': 94, 'api_weather_description': 'mist'}
Published data Successfully: %s {'temperature': 116, 'humidity': 59, 'soilmoisture': 65, 'status': 'motor off', 'api_tem
perature': 298.14, 'api_pressure': 1013, 'api_humidity': 94, 'api_weather_description': 'mist'}
Published data Successfully: %s {'temperature': 72, 'humidity': 71, 'soilmoisture': 13, 'status': 'motor off', 'api_temp
erature': 298.14, 'api_pressure': 1013, 'api_humidity': 94, 'api_weather_description': 'mist'}
Published data Successfully: %s {'temperature': 104, 'humidity': 82, 'soilmoisture': 90, 'status': 'motor off', 'api_tem
perature': 298.14, 'api_pressure': 1013, 'api_humidity': 94, 'api_weather_description': 'mist'}
Published data Successfully: %s {'temperature': 63, 'humidity': 82, 'soilmoisture': 98, 'status': 'motor off', 'api_temp
erature': 298.14, 'api_pressure': 1013, 'api_humidity': 94, 'api_weather_description': 'mist'}
Published data Successfully: %s {'temperature': 27, 'humidity': 57, 'soilmoisture': 21, 'status': 'motor off', 'api_temp
erature': 298.14, 'api_pressure': 1013, 'api_humidity': 94, 'api_weather_description': 'mist'}
Published data Successfully: %s {'temperature': 107, 'humidity': 57, 'soilmoisture': 44, 'status': 'motor off', 'api_tem
perature': 298.14, 'api_pressure': 1013, 'api_humidity': 94, 'api_weather_description': 'mist'}
Published data Successfully: %s {'temperature': -15, 'humidity': 67, 'soilmoisture': 41, 'status': 'motor off', 'api_tem
perature': 298.14, 'api_pressure': 1013, 'api_humidity': 94, 'api_weather_description': 'mist'}
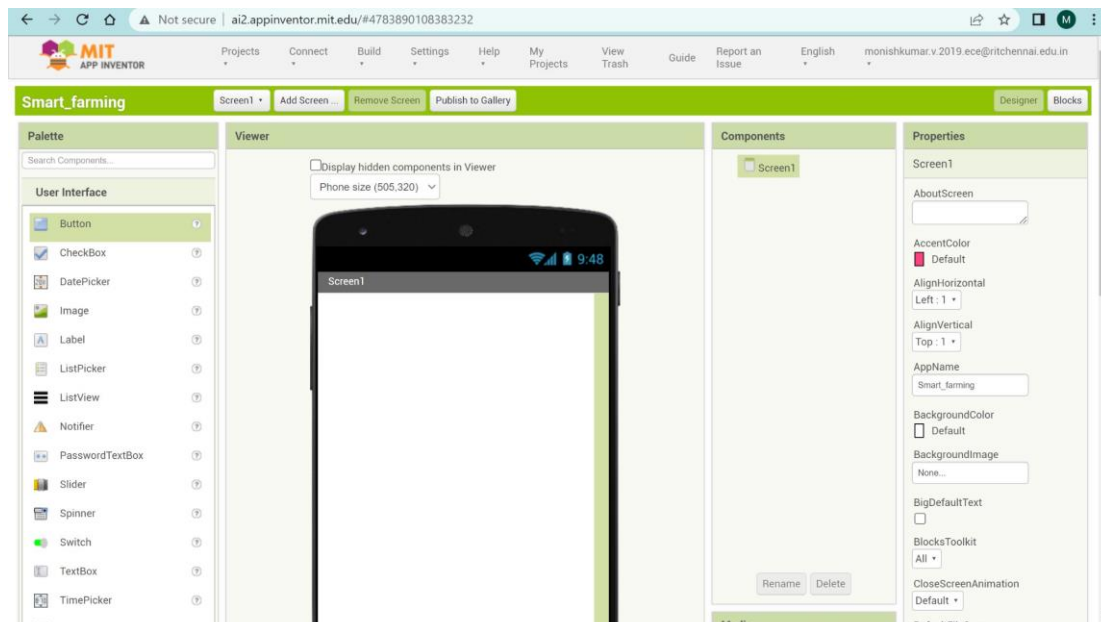
Web UI Output

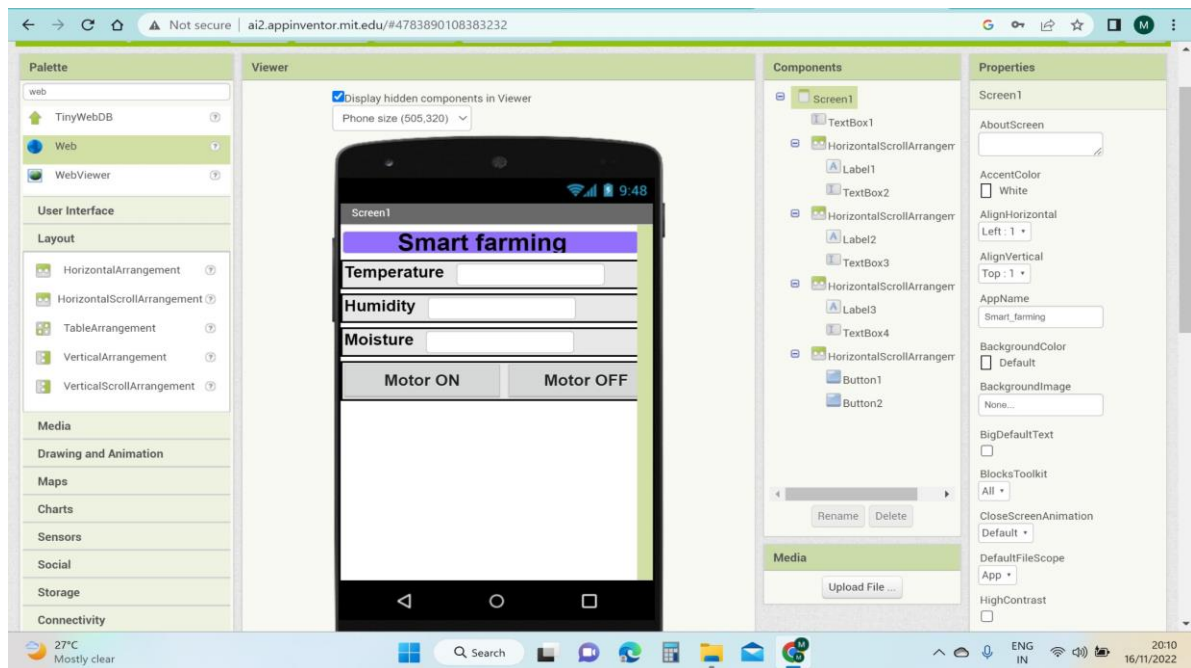# IBM Watson IoT Platform Device Connect & Live Data
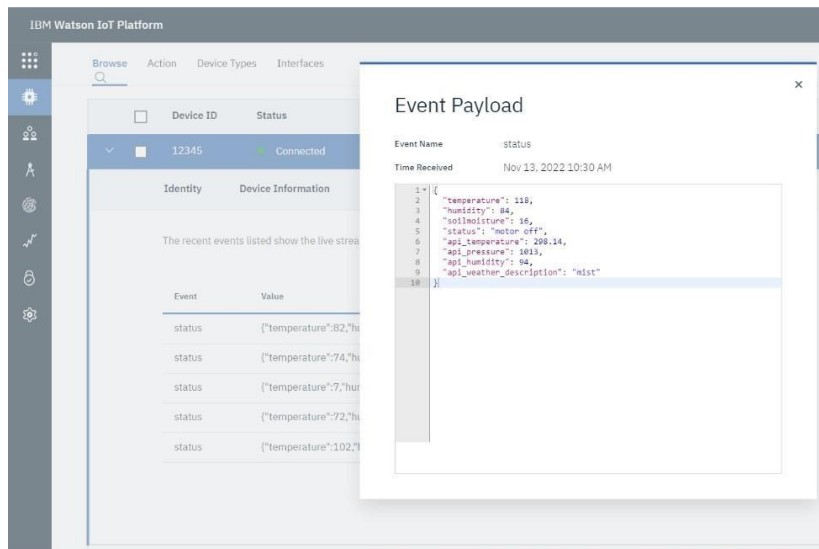
MIT APP INVENTOR
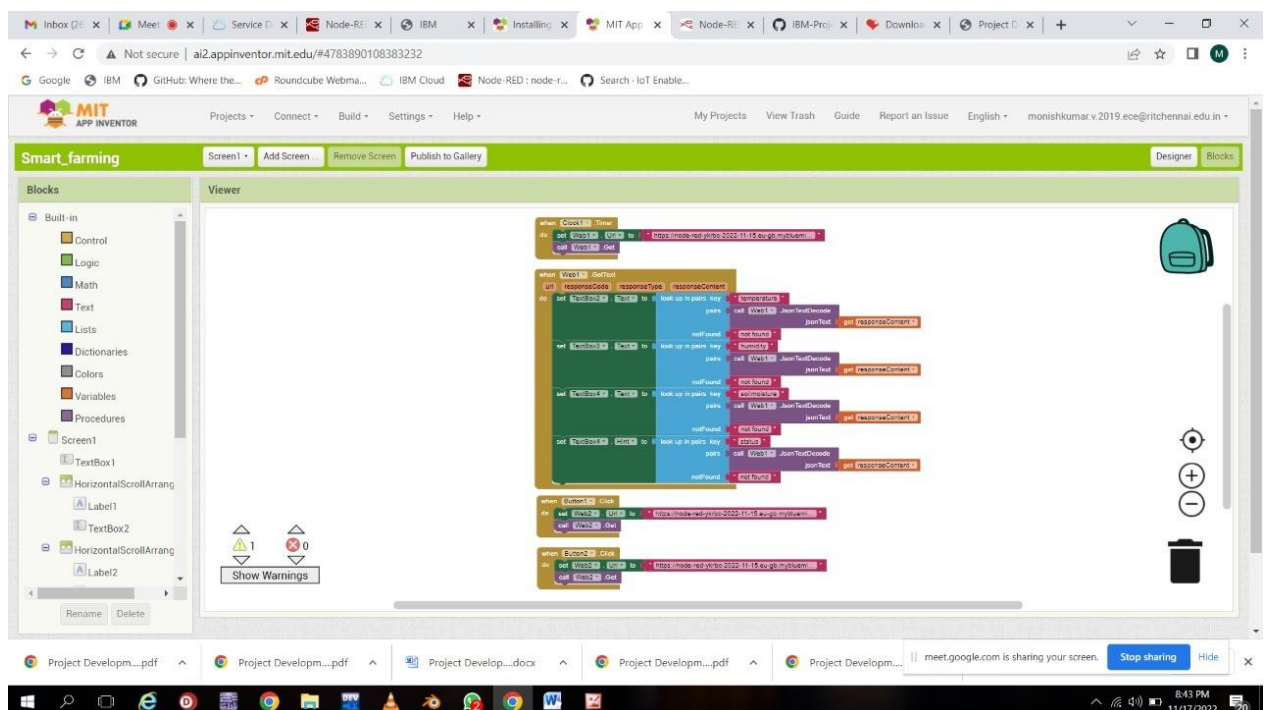
Step 1: Login Into MIT App Inventor

Step 2: Create Your User Interface By Using the Preset Tools

Step 3: Back End Process

- Specify the Cloud URL Details to Receive the Date From Node Red.
- Commend Request From App To Node RED to Turn ON /OFF Motor.
- Weather API Data is Displaced From Node RED.

Step 4: Live Output In Mobile Application