# SPRINT 4

**Framework (Cloud deployment)**

| | |
|---|---|
| Team ID | PNT2022TMID26635 |
| Project Name | Project – IoT based Smart Crop Protection for Agriculture. |

## Cloud Deployment:

➢ On cloud, analyse and store the data and communicate wirelessly for further analysis is possible. Anyone can access the temperature, humidity and soil moisture from anywhere using any Internet enabled device like PC, tablet or smart phone, and analyse it.

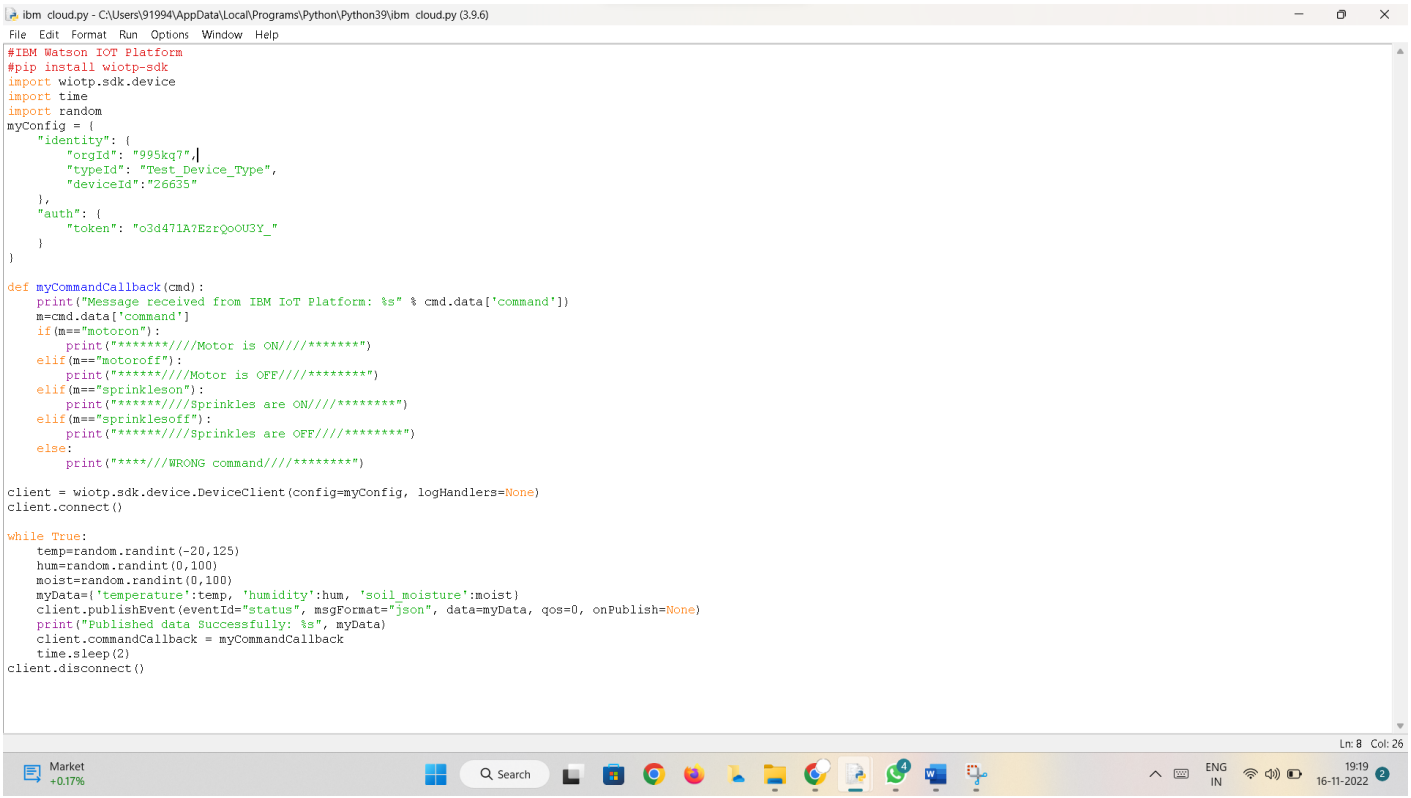
Animals and birds that harms the field crop and affect the production . From these problems, the authors make a design of cloud computing-based detection system of alarm using a microcontroller that can provide video recordings and theartening sound and also access temp, humid and moist information from smartphone application.

Through app user can able to turn on and off the motor and sprinkles.

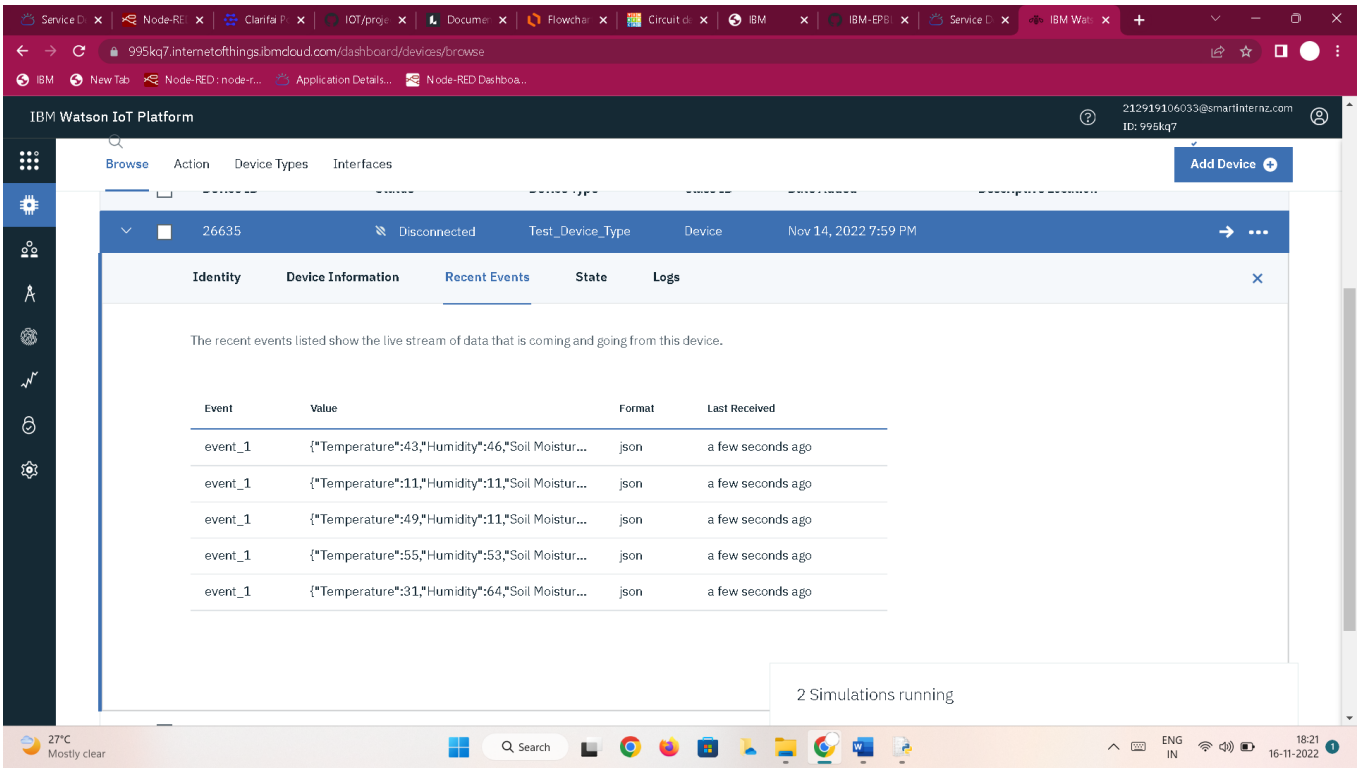
## ➢ 5.5 Receiving commands in IBM cloud using Python program:

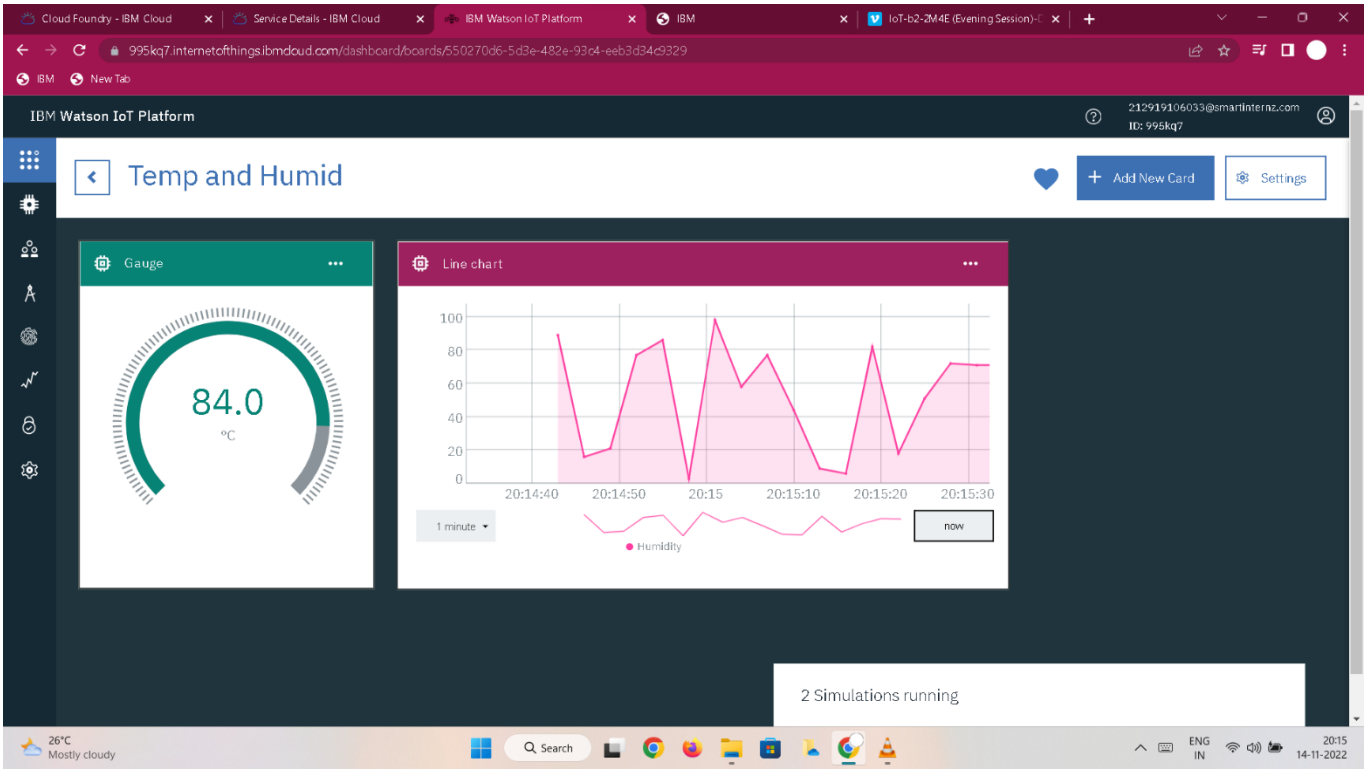
```
#IBM Watson IOT Platform
#pip install wiotp-sdk
import wiotp.sdk.device
import time
import random
myConfig = {
   "identity": {
      "orgId": "995kq7",
      "typeId": "Test_Device_Type",
      "deviceId":"26635"
   },
   "auth": {
      "token": "o3d471A?EzrQoOU3Y_"
   }
}

def myCommandCallback(cmd):
   print("Message received from IBM IoT Platform: %s" % cmd.data['command'])
   m=cmd.data['command']
   if(m=="motoron"):
```

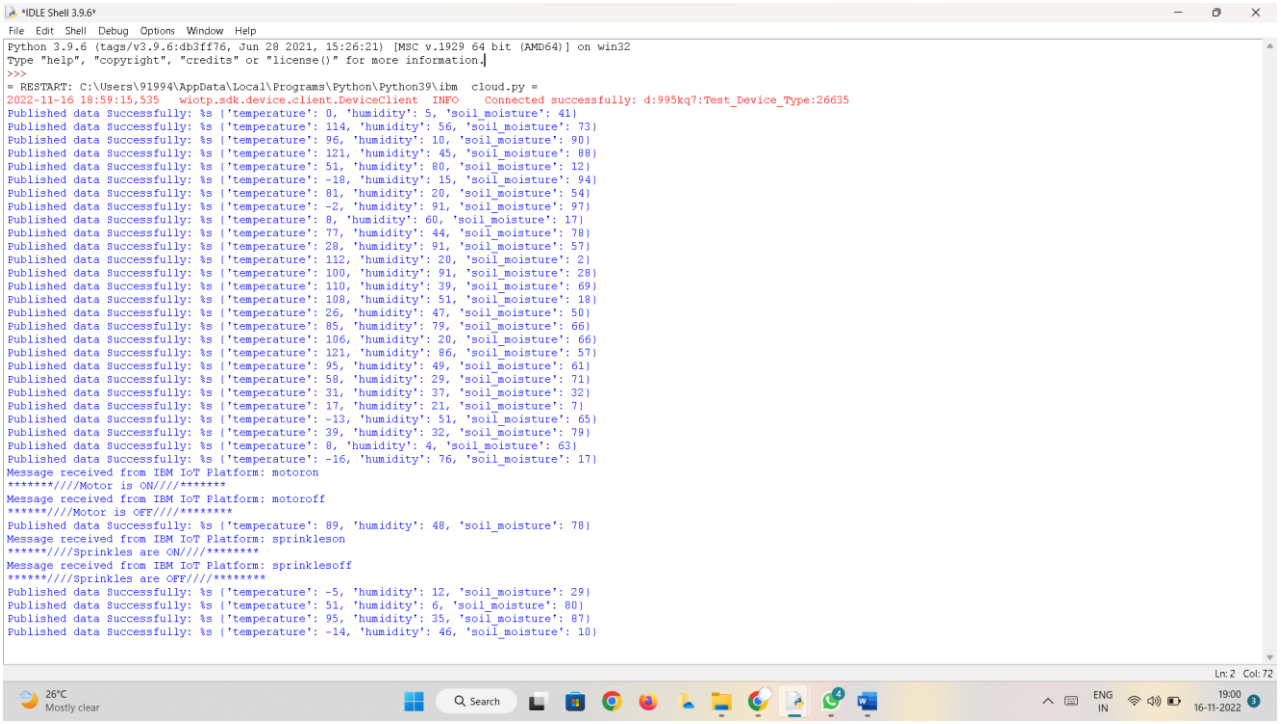
```
        print("*******////Motor is ON////*******")
    elif(m=="motoroff"):
        print("******////Motor is OFF////********")
    elif(m=="sprinkleson"):
        print("******////Sprinkles are ON////********")
    elif(m=="sprinklesoff"):
        print("******////Sprinkles are OFF////********")
    else:
        print("****///WRONG command////********")

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

while True:
    temp=random.randint(-20,125)
    hum=random.randint(0,100)
    moist=random.randint(0,100)
    myData={'temperature':temp, 'humidity':hum, 'soil_moisture':moist}
    client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0, onPublish=None)
    print("Published data Successfully: %s", myData)
    client.commandCallback = myCommandCallback
    time.sleep(2)
client.disconnect()
```

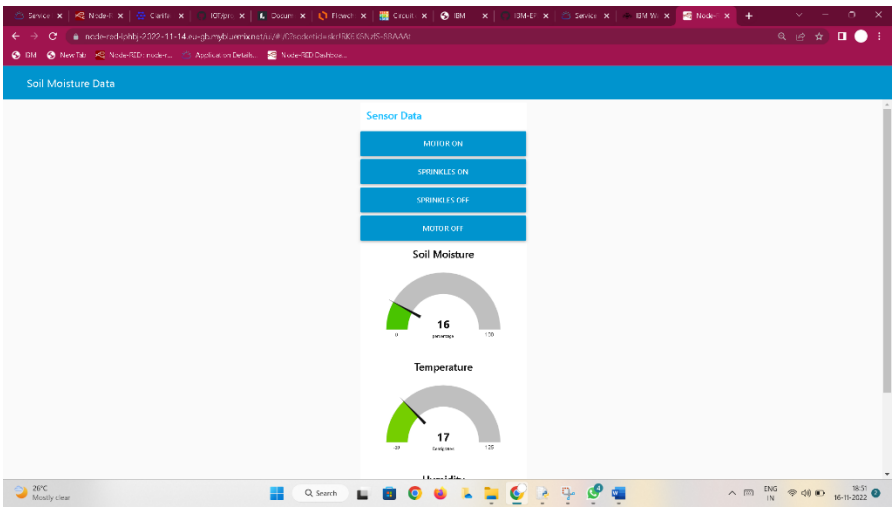


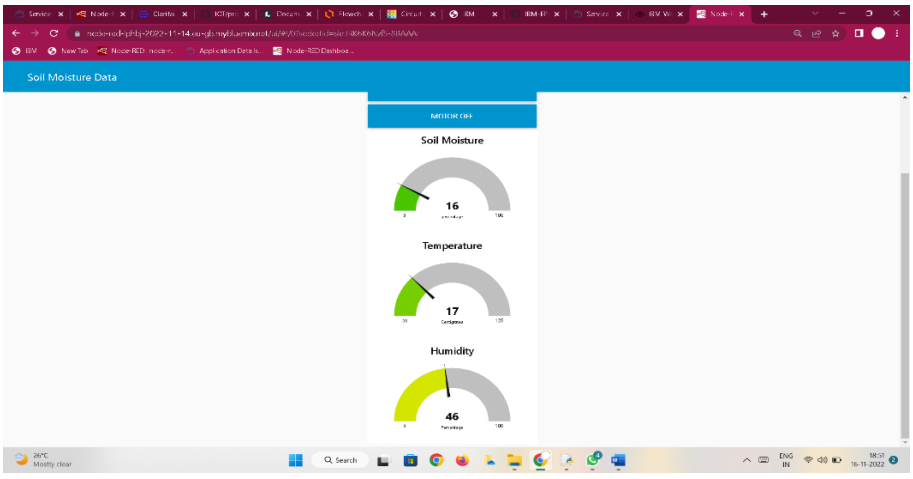
## 6.Observations & Results:

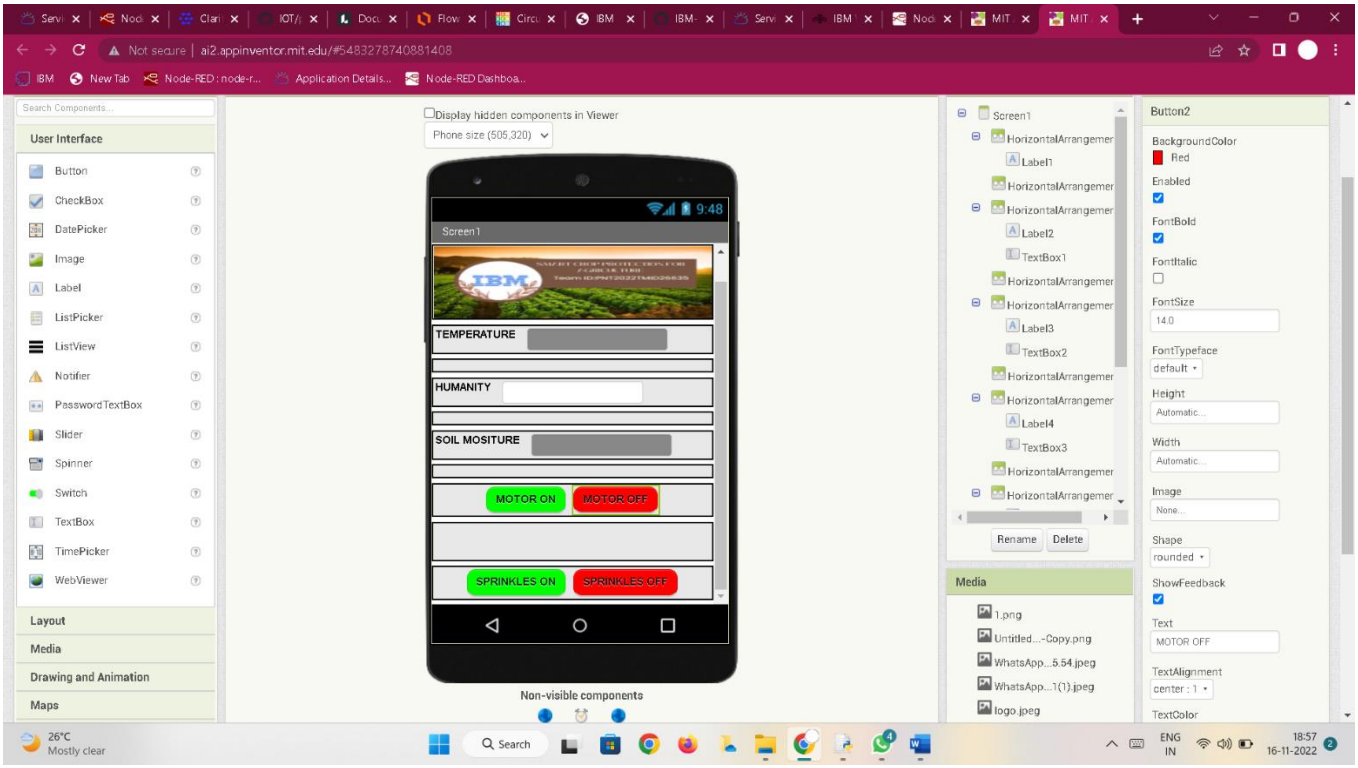



*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\91994\AppData\Local\Programs\Python\Python39\ibm cloud.py =
2022-11-16 18:59:15,535 wiotp.sdk.device.client.DeviceClient INFO Connected successfully: d:995kq7:Test_Device_Type:26635
Published data Successfully: %s {'temperature': 0, 'humidity': 5, 'soil_moisture': 41}
Published data Successfully: %s {'temperature': 114, 'humidity': 56, 'soil_moisture': 73}
Published data Successfully: %s {'temperature': 96, 'humidity': 10, 'soil_moisture': 90}
Published data Successfully: %s {'temperature': 121, 'humidity': 45, 'soil_moisture': 88}
Published data Successfully: %s {'temperature': 51, 'humidity': 80, 'soil_moisture': 12}
Published data Successfully: %s {'temperature': -18, 'humidity': 15, 'soil_moisture': 94}
Published data Successfully: %s {'temperature': 81, 'humidity': 20, 'soil_moisture': 54}
Published data Successfully: %s {'temperature': -2, 'humidity': 91, 'soil_moisture': 97}
Published data Successfully: %s {'temperature': 8, 'humidity': 60, 'soil_moisture': 17}
Published data Successfully: %s {'temperature': 77, 'humidity': 44, 'soil_moisture': 78}
Published data Successfully: %s {'temperature': 28, 'humidity': 91, 'soil_moisture': 57}
Published data Successfully: %s {'temperature': 112, 'humidity': 20, 'soil_moisture': 2}
Published data Successfully: %s {'temperature': 100, 'humidity': 91, 'soil_moisture': 28}
Published data Successfully: %s {'temperature': 110, 'humidity': 39, 'soil_moisture': 69}
Published data Successfully: %s {'temperature': 108, 'humidity': 51, 'soil_moisture': 18}
Published data Successfully: %s {'temperature': 26, 'humidity': 47, 'soil_moisture': 50}
Published data Successfully: %s {'temperature': 85, 'humidity': 79, 'soil_moisture': 66}
Published data Successfully: %s {'temperature': 106, 'humidity': 20, 'soil_moisture': 66}
Published data Successfully: %s {'temperature': 121, 'humidity': 86, 'soil_moisture': 57}
Published data Successfully: %s {'temperature': 95, 'humidity': 49, 'soil_moisture': 61}
Published data Successfully: %s {'temperature': 58, 'humidity': 29, 'soil_moisture': 71}
Published data Successfully: %s {'temperature': 31, 'humidity': 37, 'soil_moisture': 32}
Published data Successfully: %s {'temperature': 17, 'humidity': 21, 'soil_moisture': 7}
Published data Successfully: %s {'temperature': -13, 'humidity': 51, 'soil_moisture': 65}
Published data Successfully: %s {'temperature': 39, 'humidity': 32, 'soil_moisture': 79}
Published data Successfully: %s {'temperature': 8, 'humidity': 4, 'soil_moisture': 63}
Published data Successfully: %s {'temperature': -16, 'humidity': 76, 'soil_moisture': 17}
Message received from IBM IoT Platform: motoron
********///Motor is ON////********
Message received from IBM IoT Platform: motoroff
********///Motor is OFF////********
Published data Successfully: %s {'temperature': 89, 'humidity': 48, 'soil_moisture': 78}
Message received from IBM IoT Platform: sprinkleson
******////Sprinkles are ON////********
Message received from IBM IoT Platform: sprinklesoff
******////Sprinkles are OFF////********
Published data Successfully: %s {'temperature': -5, 'humidity': 12, 'soil_moisture': 29}
Published data Successfully: %s {'temperature': 51, 'humidity': 6, 'soil_moisture': 80}
Published data Successfully: %s {'temperature': 95, 'humidity': 35, 'soil_moisture': 87}
Published data Successfully: %s {'temperature': -14, 'humidity': 46, 'soil_moisture': 10}
Ln: 2 Col: 72
26°C
Mostly clear
Search
ENG
IN
19:00
16-11-2022


Soil Moisture Data
Sensor Data
MOTOR ON
SPRINKLES ON
SPRINKLES OFF
MOTOR OFF
Soil Moisture
16
Temperature
17


Soil Moisture Data
MOTOR OFF
Soil Moisture
16
Temperature
17
Humidity
46


Not secure | ai2.appinventor.mit.edu/#5483278740881408
Display hidden components in Viewer
Phone size (505,320)
Screen1
TEMPERATURE
HUMANITY
SOIL MOSITURE
MOTOR ON
MOTOR OFF
SPRINKLES ON
SPRINKLES OFF
Non-visible components
User Interface
Button
CheckBox
DatePicker
Image
Label
ListPicker
ListView
Notifier
PasswordTextBox
Slider
Spinner
Switch
TextBox
TimePicker
WebViewer
Layout
Media
Drawing and Animation
Maps
Rename
Delete
Button2
BackgroundColor
Red
Enabled
FontBold
FontItalic
FontSize
FontTypeface
Height
Width
Image
Shape
rounded
ShowFeedback
Text
MOTOR OFF
TextAlignment
TextColor
1.png
Untitled...-Copy.png
WhatsApp...5.54.jpeg
WhatsApp...1(1).jpeg
logo.jpeg


Screen1
SMART CROP PROTECTION
SMART CROP PROTECTION FOR AGRICULTURE
Team ID:PNT2022TMID26635
TEMPERATURE
77
HUMANITY
44
SOIL MOSITURE
78
MOTOR ON
MOTOR OFF
SPRINKLES ON
SPRINKLES OFF

## 7.Advantages & Disadvantages:

### Advantages:

➡It allows farmers to maximize yields using minimum resources such as water, fertilizers, seeds etc.

➡Solar powered and mobile operated pumps save cost of electricity.

➡Smart agriculture use drones and robots which helps in many ways. These improves data collection process and helps in wireless monitoring and control.

➡It is cost effective method.

➡It delivers high quality crop production.

### Disadvantages:

➡The smart agriculture needs availability of internet continuously. Rural part of most of the developing countries do not fulfil this requirement. Moreover internet connection is slower.

➡The smart farming based equipments require farmers to understand and learn the use of technology. This is major challange in adopting smart agriculture farming at large scale across the countries.

## 8.Conclusion and Future Work:

In this paper we use IOT technology for enhancing the existing safety standards. While making this prototype has been to bring a revolution in the field of aware against the animals and birds entry in farm field and hence nullify any major or minor losses being caused due to them. We have used the IOT technology to make a Smart Crop Protection for Agriculture which having Apps to access and control the IOT devices to the concerned farmers and an ability performing data analytics on sensor. This system will be able to detect the motion of animals and birds ,measure parameters like TEMPERATURE, HUMIDITY and SOIL MOISTURE. This will prevent form the major losses and improve in high yield in the field.

## 9.References:

IBM cloud reference: https://cloud.ibm.com/

IoT simulator: https://watson-iot-sensor-simulator.mybluemix.net/

MIT Apps: https://appinventor.mit.edu/