

| PROJECT DEVELOPMENT PHASE | |
|---------------------------|---|
| SPRINT DELIVERY – 4 | |
| TEAM ID | PNT2022TMID07016 |
| PROJECT NAME | Smart Farmer - IoT Enabled Smart Farming Monitoring Application |

Python program connects with the IBM cloud

```
import time
import sys
import ibmiotf.application
import ibmiotf.device
import random

#Provide your IBM Watson Device Credentials
organization = "r3m467"
deviceType = "NalaiyaThiran"
deviceId = "NalaiyaThiran"
authMethod = "token"
authToken = "NalaiyaThiran"

# Initialize GPIO
def myCommandCallback(cmd):
    print("Command received: %s" % cmd.data['Command'])
    status=cmd.data['Command']
    if status=="Motor ON":
        print ("Motor turned ON")
    elif status == "Motor OFF":
        print ("Motor turned OFF")
    else :
        print ("Invalid Command")

try:
    deviceOptions = {"org": organization, "type": deviceType, "id": deviceId,"auth-method":
authMethod,"auth-token":authToken}
    deviceCli = ibmiotf.device.Client(deviceOptions)
    deviceCli.connect()
    #.....

except Exception as e:
    print("Caught exception connecting device: %s" % str(e))
    sys.exit()

# Connect and send a datapoint "hello" with value "world" into the cloud as an event of type
"greeting" 10 times

while True:
```

```

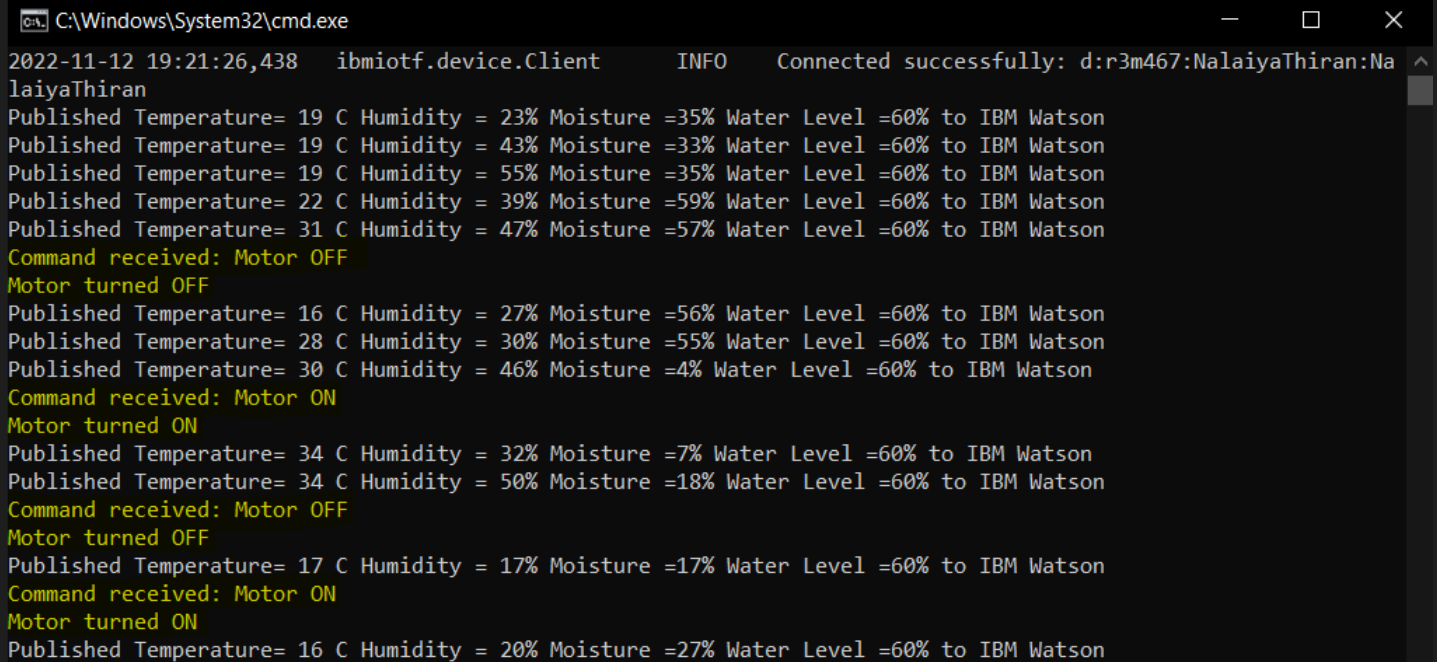
#Get Sensor Data from DHT11
temp=random.randint(15,35)
Mois,Humid=random.randint(200,60000)//1000,random.randint(200,60000)//1000
Water = 60
time.sleep(10)
data = { 'Temperature' : temp, 'Humidity': Humid, 'Moisture' :Mois, 'Water':Water}

#print data
def myOnPublishCallback():
    print ("Published Temperature= %s C" % temp, "Humidity = %s%" % Humid, "Moisture
=%s%" %Mois,"Water Level =%s%" %Water, "to IBM Watson")

    success = deviceCli.publishEvent("IoTSensor", "json", data, qos=0,
on_publish=myOnPublishCallback)
    deviceCli.commandCallback = myCommandCallback
    if not success:
        print("Not connected to IoTF")

# Disconnect the device and application from the cloud
deviceCli.disconnect()

```

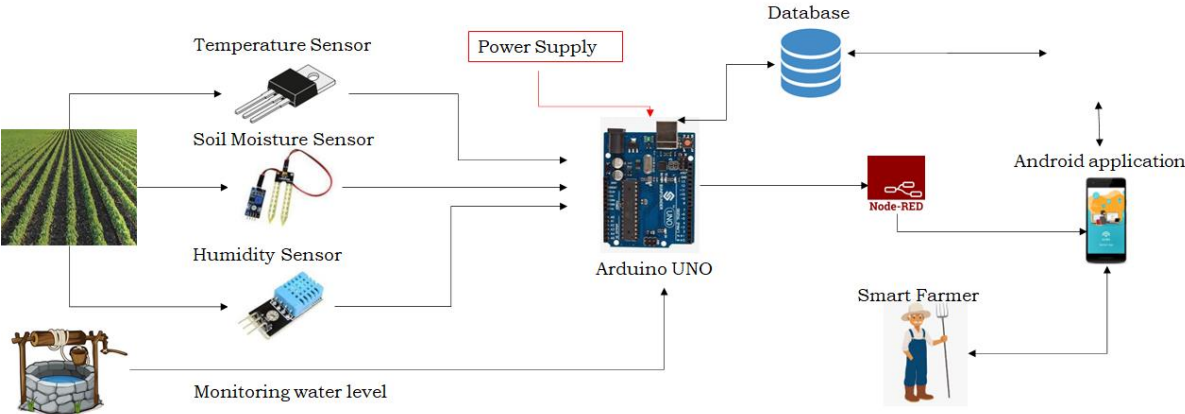
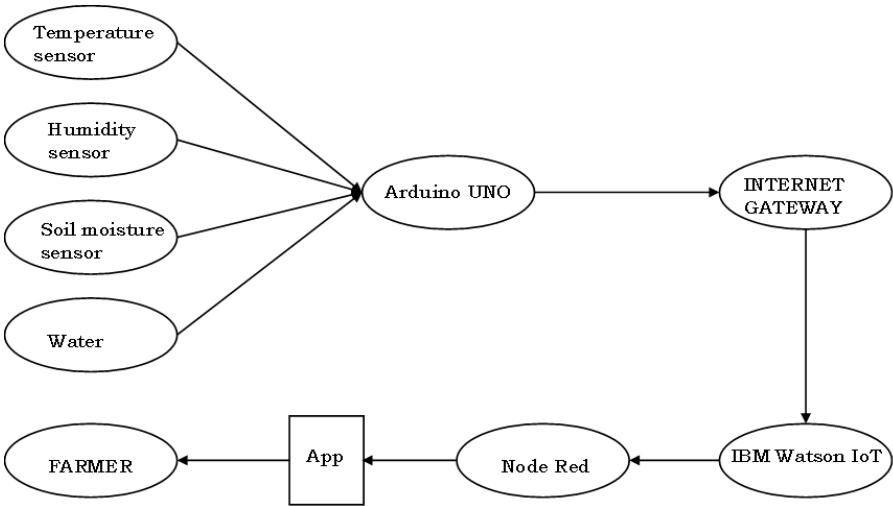


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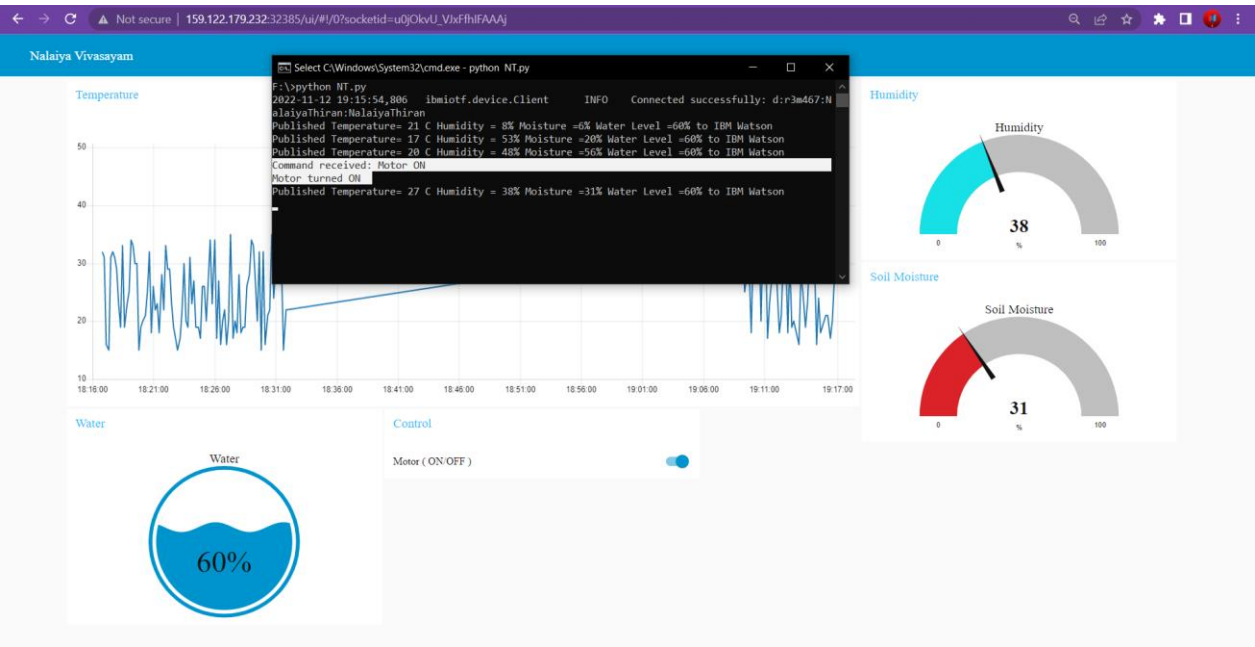
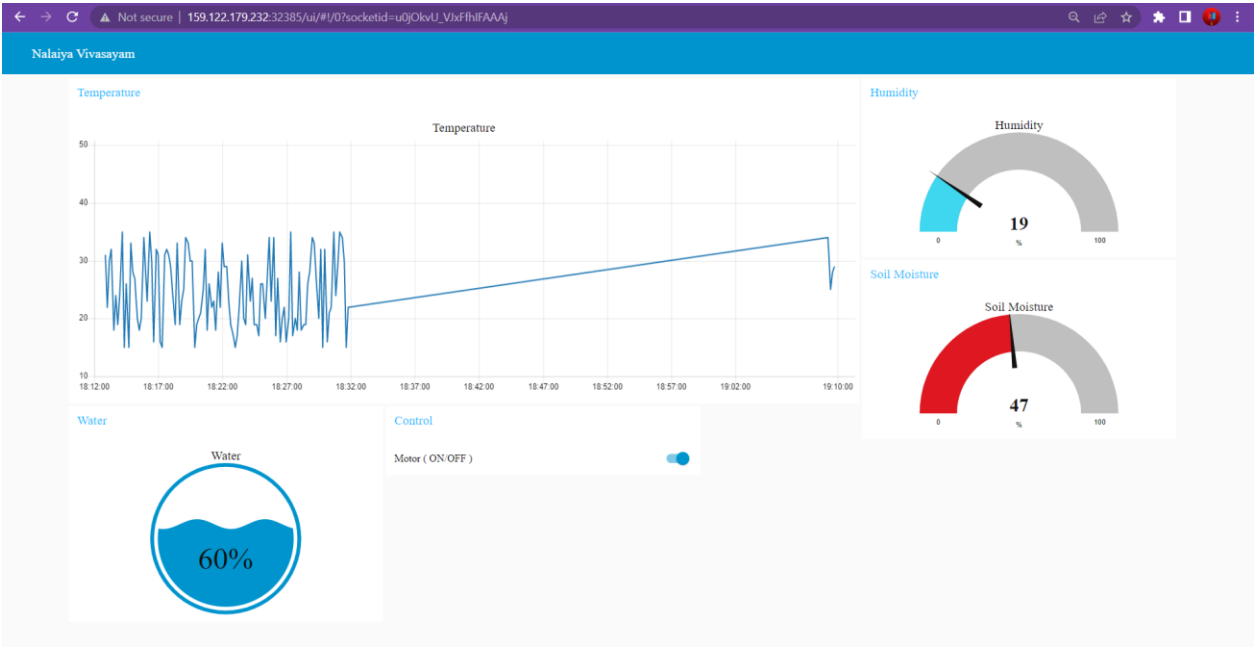
C:\Windows\System32\cmd.exe
2022-11-12 19:21:26,438  ibmiotf.device.Client  INFO  Connected successfully: d:r3m467:NalaiyaThiran:Na
laiyaThiran
Published Temperature= 19 C Humidity = 23% Moisture =35% Water Level =60% to IBM Watson
Published Temperature= 19 C Humidity = 43% Moisture =33% Water Level =60% to IBM Watson
Published Temperature= 19 C Humidity = 55% Moisture =35% Water Level =60% to IBM Watson
Published Temperature= 22 C Humidity = 39% Moisture =59% Water Level =60% to IBM Watson
Published Temperature= 31 C Humidity = 47% Moisture =57% Water Level =60% to IBM Watson
Command received: Motor OFF
Motor turned OFF
Published Temperature= 16 C Humidity = 27% Moisture =56% Water Level =60% to IBM Watson
Published Temperature= 28 C Humidity = 30% Moisture =55% Water Level =60% to IBM Watson
Published Temperature= 30 C Humidity = 46% Moisture =4% Water Level =60% to IBM Watson
Command received: Motor ON
Motor turned ON
Published Temperature= 34 C Humidity = 32% Moisture =7% Water Level =60% to IBM Watson
Published Temperature= 34 C Humidity = 50% Moisture =18% Water Level =60% to IBM Watson
Command received: Motor OFF
Motor turned OFF
Published Temperature= 17 C Humidity = 17% Moisture =17% Water Level =60% to IBM Watson
Command received: Motor ON
Motor turned ON
Published Temperature= 16 C Humidity = 20% Moisture =27% Water Level =60% to IBM Watson

```

Flow Chart



Observations & Results



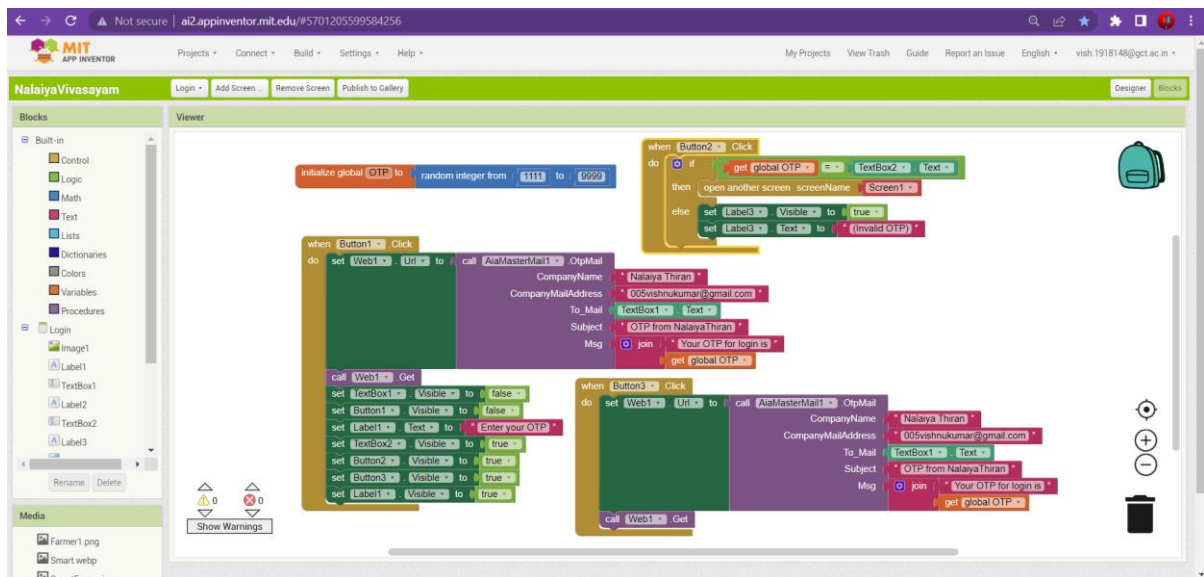
MOBILE APPLICATION:

- Login Page
- Main Screen

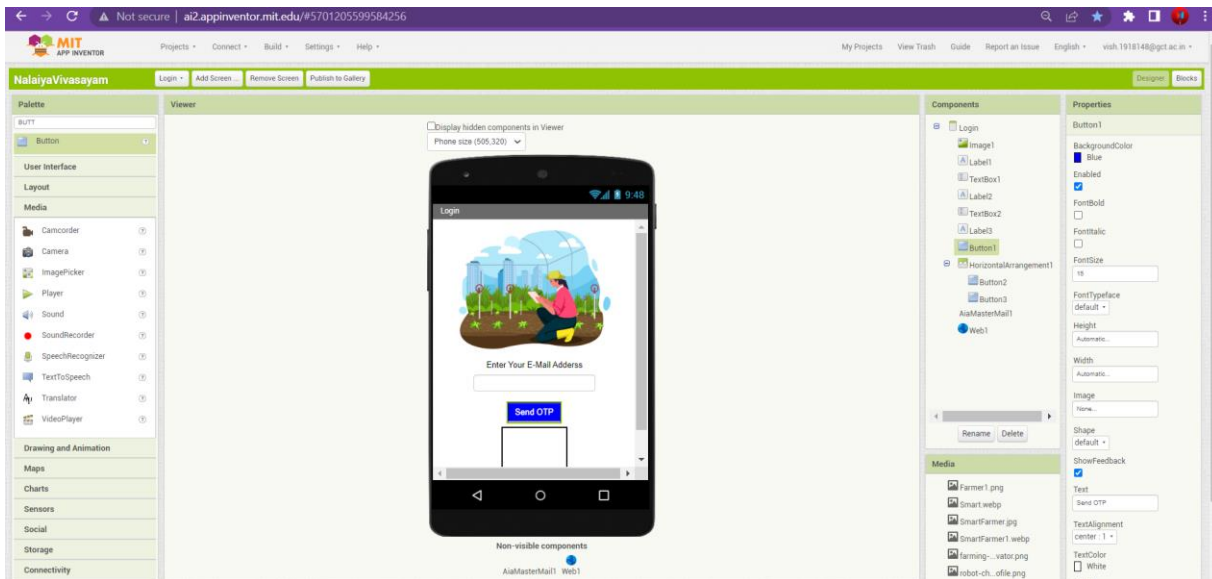
Login Page

- User can use their E-Mail address to login into the app and then they can access their resource.
- If user enters the e-mail, then OTP will be sent to the entered e-mail
- If user enters the wrong OTP, then it alerts with the Invalid OTP message
- If user forgets the OTP in short time, they can make use RESEND OTP button
- On successful OTP verification, User can navigate to the main screen

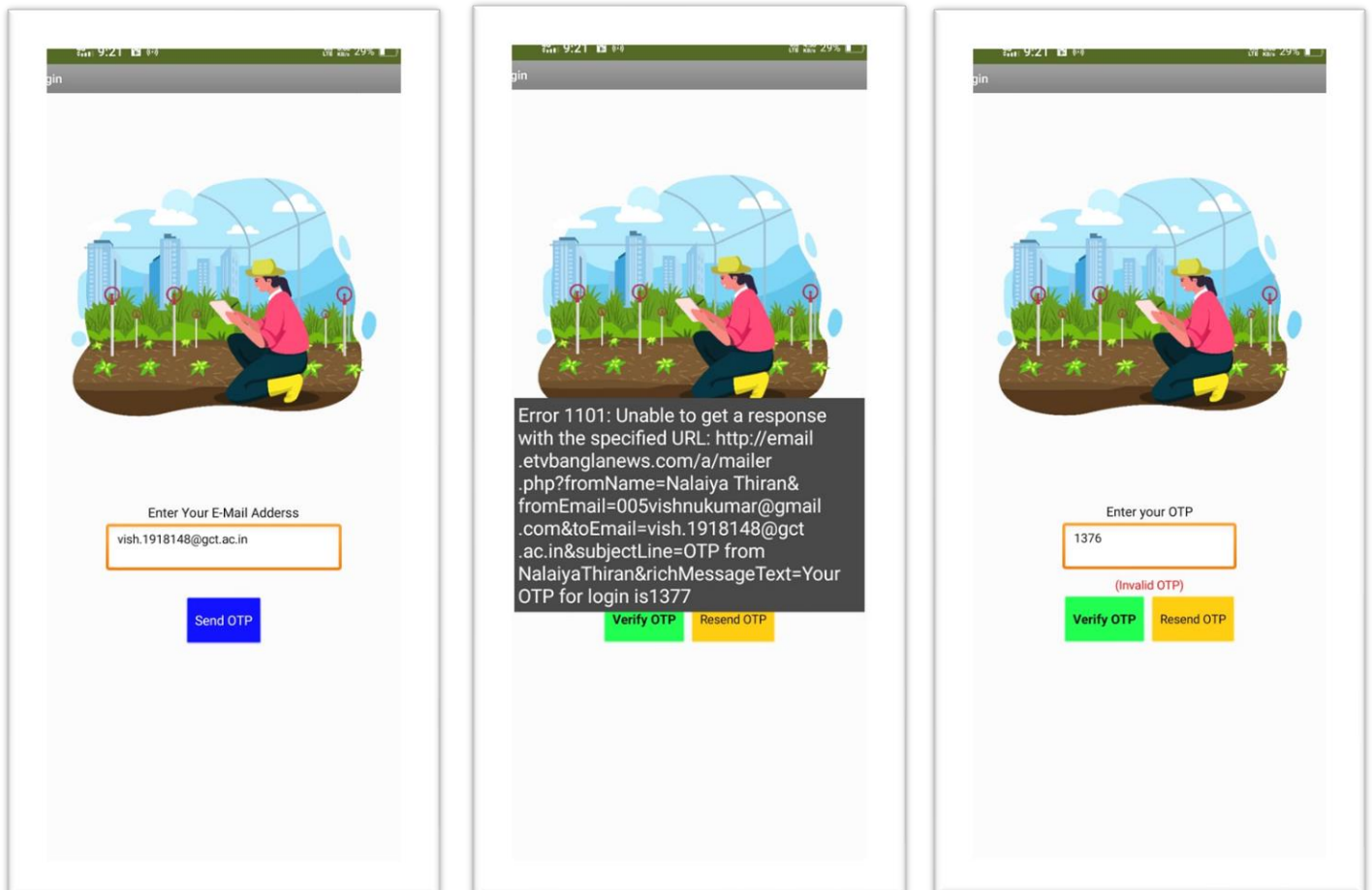
Blocks



Design



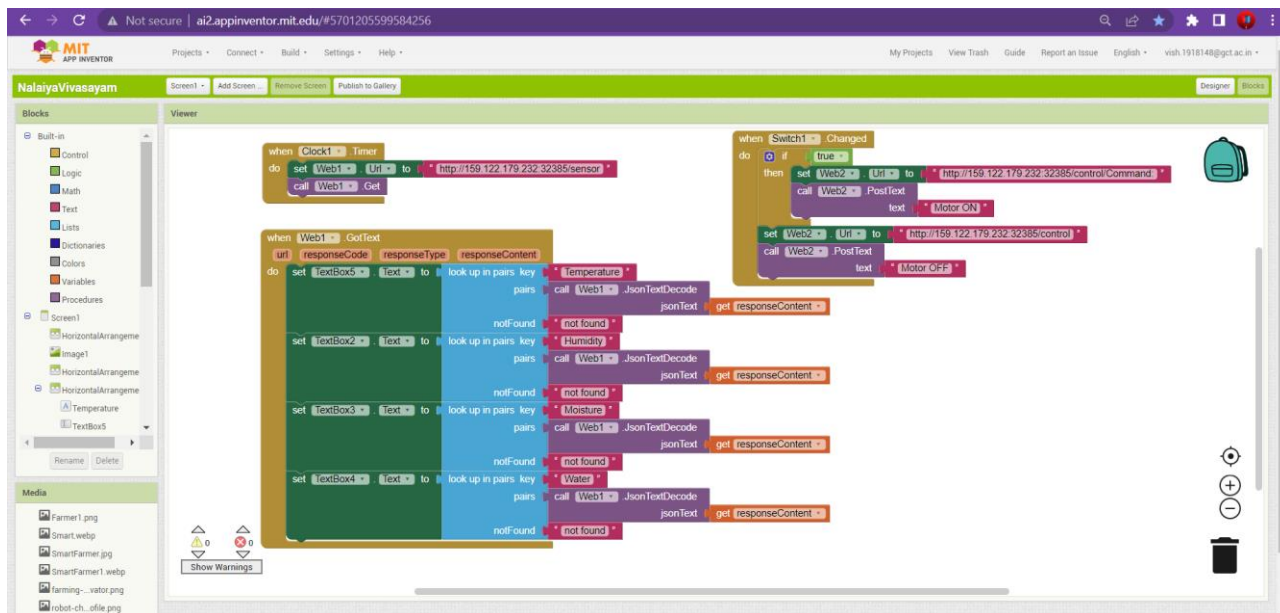
Output



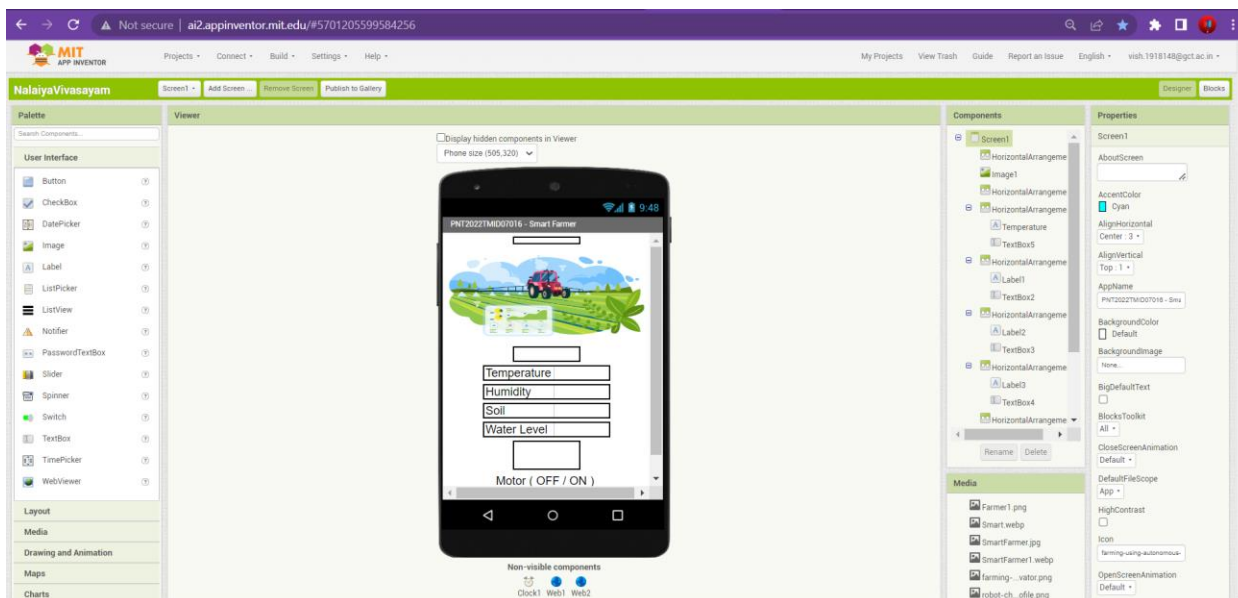
Main Screen

- When user verification is successful then they will navigate to this main screen
- User can view the data of the sensor which are fetched from the IBM Watson IoT Platform
- When user turns on the switch button, they can control the motor ON / OFF action

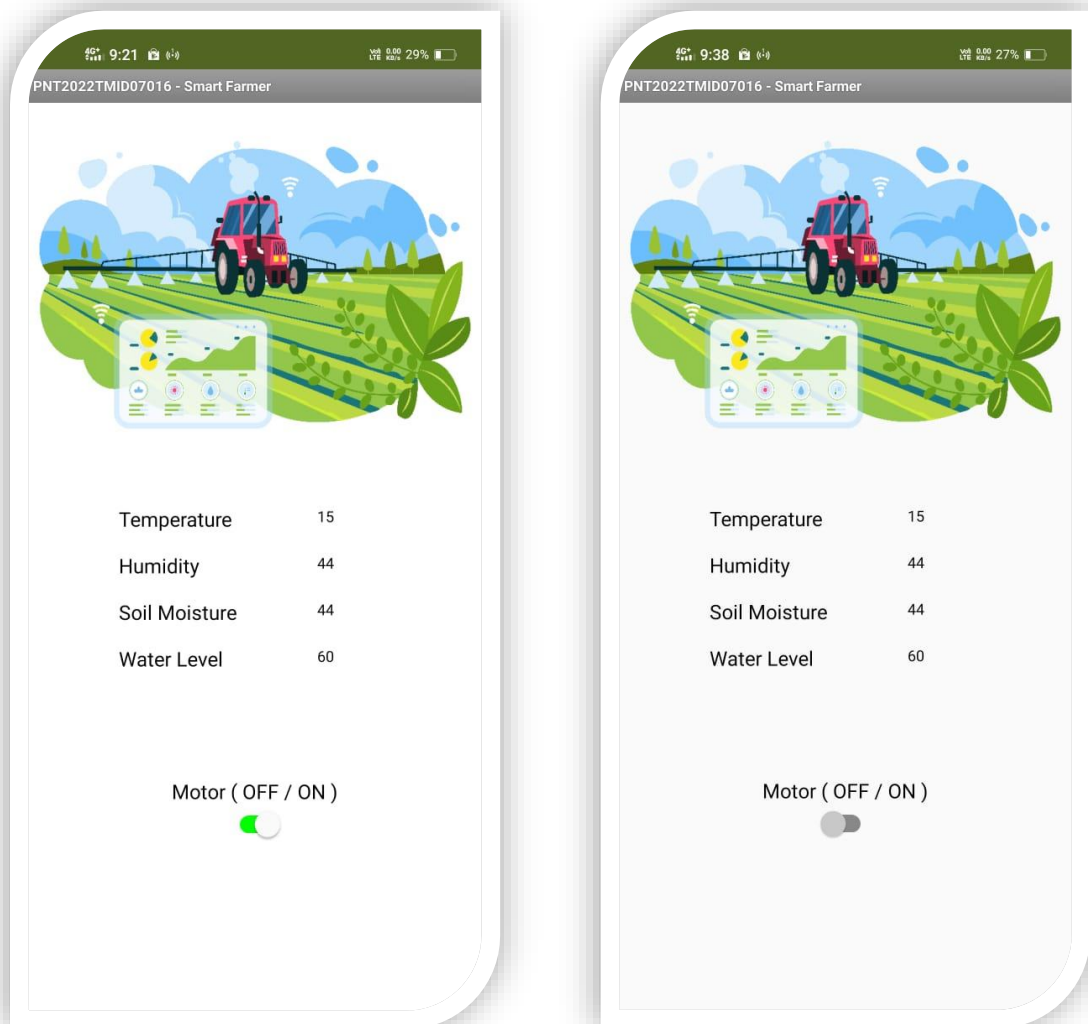
Blocks



Design



Output



Advantages:

- Farms can be monitored and controlled remotely.
- Increase in convenience to farmers.
- Less labor cost.
- Better standards

Disadvantages:

- Lack of internet/connectivity issues.
- Added cost of internet and internet gateway infrastructure.
- Farmers wanted to adapt the use of Mobil App.

Conclusion:

Thus, the objective of the project to implement an IOT system in order to help farmers to control and monitor their farms has been implemented successfully.