

FINAL DELIVERABLES

Date	17 November 2022
Team ID	PNT2022TMID44390
Project Name	Project Title – Smart Farmer - IOT Enabled smart Farming Application

QR CODE FOR APP



EXPERIMENTAL ANALYSIS:

According to our project, "SMART FARMER - IOT ENABLED SMART FARMING APPLICATION" we have soil moisture, Temperature and Humidity. The random number is automatically generated due to these analysis.

PROPOSED SOLUTION:

We can use precision farming methodologies. They can make the decision whether to water the crop or postpone it by monitoring the sensor parameters and controlling the motor pumps from the mobile application itself. Automation of watering crops reduces human intervention. IOT in business can instruct systems to autonomously execute transactions in supply chains when certain conditions have been met. Increase productivity and reliability in real time environment.

APPLICATIONS:

1. Precision Farming
2. Monitor climate conditions
3. Remote sensing
4. Predictive analysis
5. Livestock monitoring

WEB APPLICATION:

The screenshot displays the IBM Watson IoT Platform interface. The main page is titled 'Browse Devices' and includes a sidebar with navigation icons. A modal window is open, titled 'Device Type: abcd', showing the configuration for a new event type. The modal includes fields for 'Event type name' (set to 'event_1'), a 'Send' button, and a 'Schedule' section set to 'Every Minute'. The 'Payload' section contains a JSON object with random values for 'randomNumber', 'temp', and 'humidity'.

Service Details - IBM Cloud x IBM Watson IoT Platform x Node-RED : node-red-unzmj-20 x +

re4wy2.internetofthings.ibmcloud.com/dashboard/devices/browse

IBM Watson IoT Platform

Browse Action Device Types Interfaces

Browse Devices

All Devices Diagnose

This table shows a summary of all devices that have been added. It can be filtered by criteria. To get started, you can add devices by using the Add Device button, or by using the Add Device button.

Search by Device ID

Device ID	Status	Device Type
12	Disconnected	abcd

Items per page 50 | 1-1 of 1 item

1 of 1 page

15:51 17-11-2022

Device Type: abcd

Events 1

New event type +

Event type name event_1 Send

Schedule

1 Every Minute

Payload

Specify the event payload in the editor window or by uploading a [CSV file](#).

```
{
  "randomNumber": random(21, 80),
  "temp": random(20, 30),
  "humidity": random(40, 60)
}
```


Service Details - IBM Cloud x IBM Watson IoT Platform x Node-RED : node-red-unzmj-20 x Node-RED Dashboard x

re4wy2.internetofthings.ibmcloud.com/dashboard/devices/browse

IBM Watson IoT Platform 731119205032@smartinternz.com ID: re4wy2

Browse Action Device Types Interfaces Add Device +

Identity Device Information Recent Events State Logs

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
event_1	{"randomNumber":44,"temp":26,"humidity":58}	json	a few seconds ago
event_1	{"randomNumber":61,"temp":29,"humidity":47}	json	a few seconds ago
event_1	{"randomNumber":76,"temp":29,"humidity":55}	json	a few seconds ago
event_1	{"randomNumber":59,"temp":21,"humidity":41}	json	a few seconds ago
event_1	{"randomNumber":34,"temp":22,"humidity":59}	json	a few seconds ago

1 Simulation running

Type here to search 30°C 15:56 17-11-2022

Service Details - IBM Cloud x IBM Watson IoT Platform x Node-RED : node-red-unzmj-20 x

node-red-unzmj-2022-11-09.au-syd.mybluemix.net/red/#flow/48919ce559699778

Node-RED Deploy

filter nodes

Flow 1

common

- inject
- debug
- complete
- catch
- status
- link in
- link call
- link out
- comment

function

msg payload

Temperature

Humidity

Soil Moisture

Temp

Humidity

Moisture

Motor ON

Motor OFF

mit app

http

[get]/sensor

mit values

http

debug

all nodes

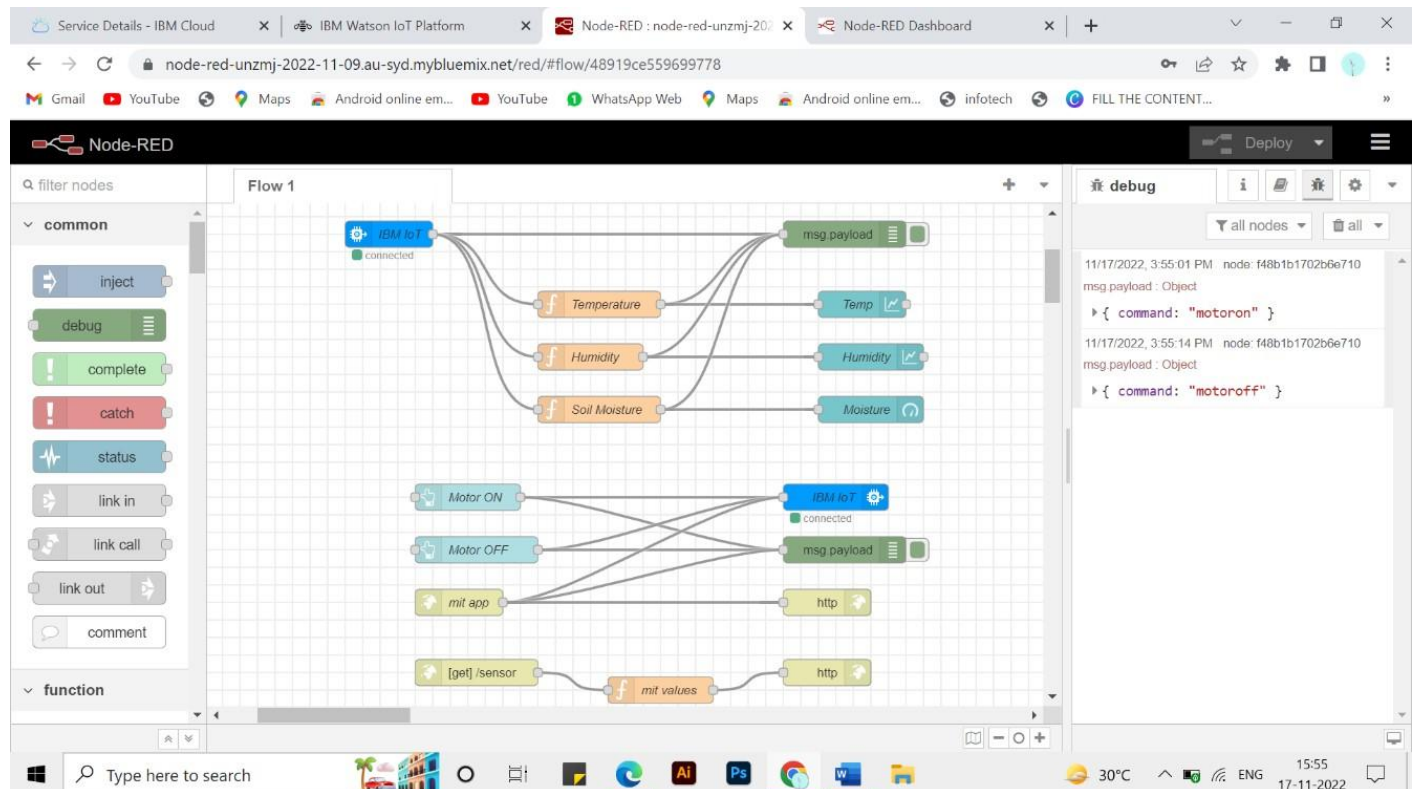
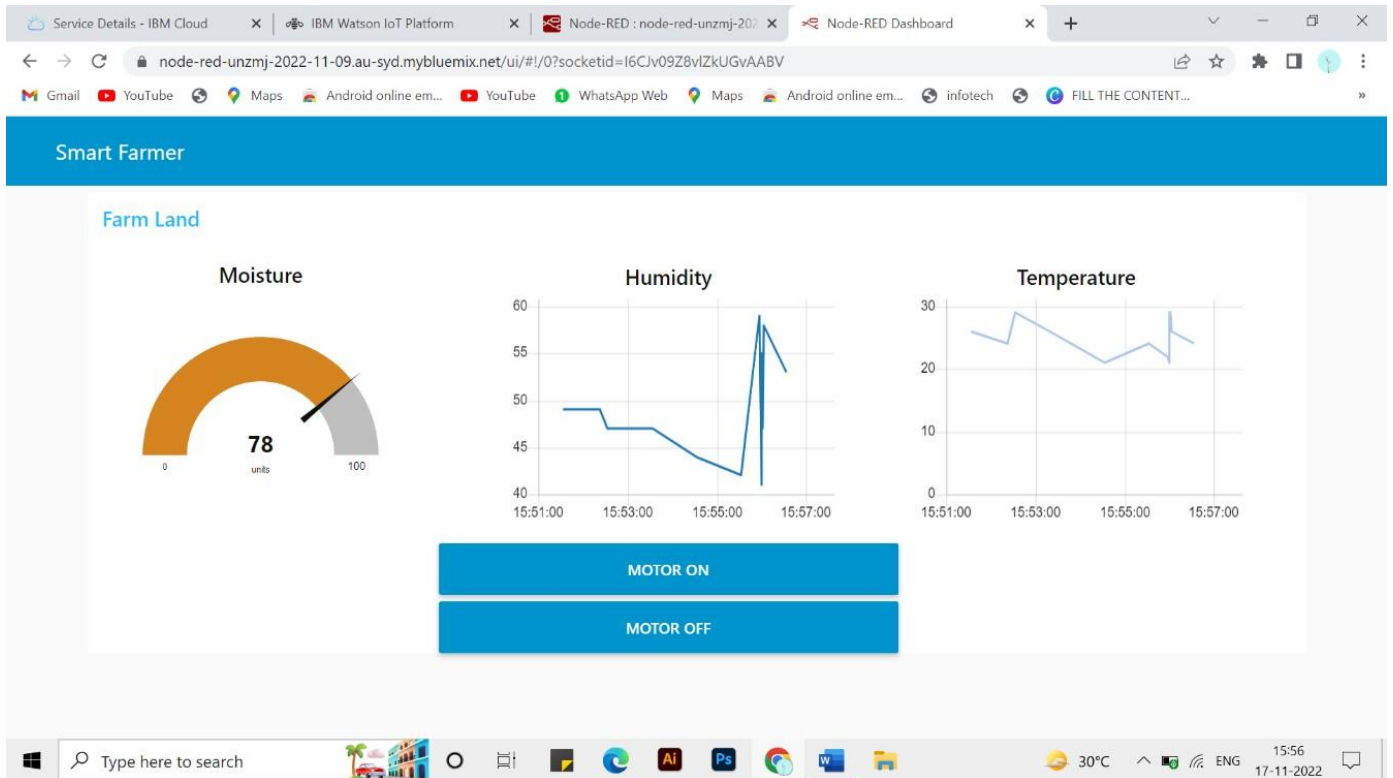
11/17/2022, 3:52:24 PM node: e90f64cf0a5419fc
iot-2/type/abcd/id/12/evt/event_1/fmt/json : msg.payload : Object
{ randomNumber: 63, temp: 24, humidity: 49 }

11/17/2022, 3:52:24 PM node: e90f64cf0a5419fc
iot-2/type/abcd/id/12/evt/event_1/fmt/json : msg.payload : number
24

11/17/2022, 3:52:24 PM node: e90f64cf0a5419fc
iot-2/type/abcd/id/12/evt/event_1/fmt/json : msg.payload : number
49

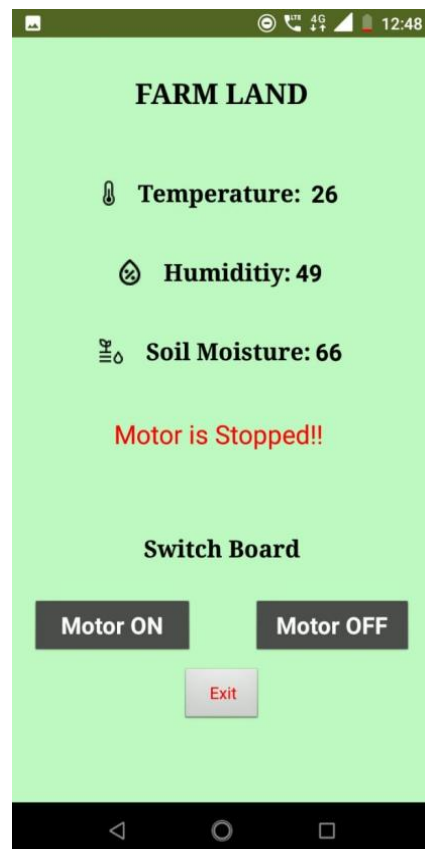
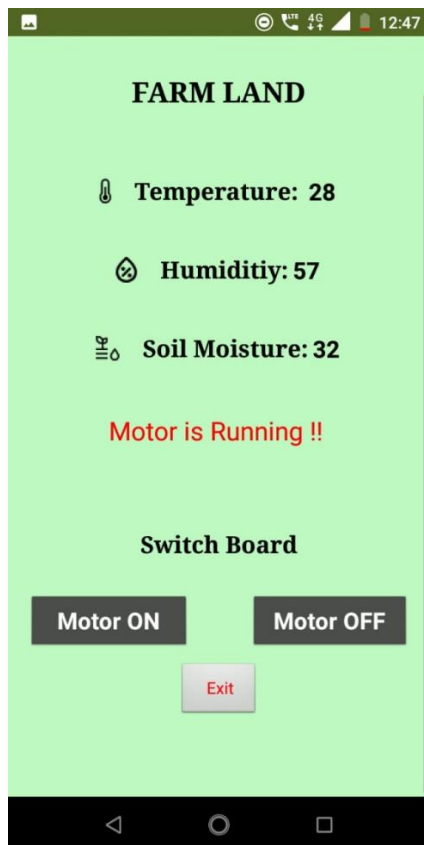
11/17/2022, 3:52:24 PM node: e90f64cf0a5419fc
iot-2/type/abcd/id/12/evt/event_1/fmt/json : msg.payload : number
63

Type here to search 30°C 15:52 17-11-2022



```
*Python 3.7.0 Shell*
File Edit Shell Debug Options Window Help
>>>
===== RESTART: C:\iot\sample code\sample.py =====
Published Temperature = 292022-11-17 12:27:01,300 ibmiotf.device.Client INFO Connected successfully: d:re4wy2:abcd:12
Humidity = 59 soilmoisture = 33 to IBM Watson
Published Temperature = 23 Humidity = 50 soilmoisture = 66 to IBM Watson
Published Temperature = 26 Humidity = 50 soilmoisture = 54 to IBM Watson
Published Temperature = 23 Humidity = 53 soilmoisture = 74 to IBM Watson
Published Temperature = 23 Humidity = 47 soilmoisture = 57 to IBM Watson
Published Temperature = 23 Humidity = 44 soilmoisture = 27 to IBM Watson
Published Temperature = 21 Humidity = 54 soilmoisture = 34 to IBM Watson
Published Temperature = 20 Humidity = 40 soilmoisture = 74 to IBM Watson
Published Temperature = 25 Humidity = 40 soilmoisture = 72 to IBM Watson
Published Temperature = 23 Humidity = 53 soilmoisture = 56 to IBM Watson
Command receive: motoron
motor is on
Published Temperature = 30 Humidity = 51 soilmoisture = 62 to IBM Watson
Published Temperature = 20 Humidity = 55 soilmoisture = 73 to IBM Watson
Published Temperature = 28 Humidity = 48 soilmoisture = 21 to IBM Watson
Published Temperature = 27 Humidity = 58 soilmoisture = 25 to IBM Watson
Command receive: motoroff
motor is off
Published Temperature = 29 Humidity = 57 soilmoisture = 24 to IBM Watson
Published Temperature = 21 Humidity = 51 soilmoisture = 50 to IBM Watson
Published Temperature = 30 Humidity = 52 soilmoisture = 78 to IBM Watson
Ln: 14 Col: 0
```

MOBILE APPLICATION:



CONCLUSION:

So after knowing about some IOT applications in agriculture, we can say that it is definitely revolutionize the agriculture industry in a few years. IOT has been applied in several areas of agriculture. A lot of research is underway to ensure more IOT devices are used to make the managing of farms easier and increase productivity. IOT is allowing farmers to easily obtain data that is useful in many ways such as decision making. With the increasing demand for food due to the rapid population increase, we expect more IOT applications in the next few years. The system uses information from soil moisture sensors to irrigate the soil to avoid the damage of crops due to over irrigation or under irrigation. The project provided us with an opportunity to study the existing systems, along with their features and drawbacks. Future work includes the usage of the application in the native languages. Also giving notifications in native audio format to assist the farmers.

FUTURE SCOPE:

IOT is bound to be an effective technology in the future, and IOT enabled devices are likely to be all-pervasive, from industry to households. The future scope of IOT is bright and varied, and it is only a matter of time before the above applications of the technology are realized. IOT smart agriculture products are designed to help monitor crop fields using sensors and by automating irrigation systems. As a result, farmers and associated brands can easily monitor the field conditions from anywhere without any hassle.

BIBILIOGRAPHY:

1. Awasthi, A., & Reddy, S. R. N. (2013). Monitoring for Precision Agriculture using Wireless Sensor Network-A review. GJCST-E: Network, Web & Security, 13(7).
2. Bhasha, S. J., & Hussain, S. M. Agricultural field monitoring and automation using PIC16F877A microcontroller and GSM. international Journal of Advanced Research in Computer Engineering & Technology (IJARCET) Volume,
3. Blackmore, S., Stout, B., Wang, M., & Runov, B. (2005, June). Agriculture—the future of agricultural mechanisation. In Proceedings of the 5th European Conference on Precision Agriculture (pp. 621-628).

6. Bulanon, D. M., Kataoka, T., Ota, Y., & Hiroma, T. (2002). AE—automation and emerging technologies: a segmentation algorithm for the automatic recognition of Fuji apples at harvest. *Biosystems Engineering*, 83(4), 405-412.
8. Divya C. H., Ramakrishna, H. and Praveena Gowda, SEEDING AND FERTILIZATION USING AN AUTOMATED ROBOT, *International Journal of Current Research* Vol. 5, Issue, 03, pp.461-466, March, 2013, ISSN: 0975-833X
9. Edan, Y., Han, S., & Kondo, N. (2009). Automation in agriculture. In *Springer handbook of automation* (pp. 1095-1128). Springer Berlin Heidelberg.
10. Fule, C. R., & Awachat, P. K. (2014). Design and Implementation of Real Time Irrigation System using a Wireless Sensor Network. *International Journal of Advance Research in Computer Science and Management Studies*, 2(1).
11. Galande, M. S., & Agrawal, D. G. (2013). Embedded Controlled Drip Irrigation System. *International Journal of Emerging Trends & Technology in Computer 2 Science (IJETTCS)*, Web Site: www.ijettcs.org Email: editor@ijettcs.org, editorijettcs@gmail.com, 2(5).
12. Giri, M., & Wavhal, D. N. (2013). Automated Intelligent Wireless Drip Irrigation Using Linear Programming. *Proceedings of the Special Interest Group on Management of Data Record*, *International Journal of Advanced Research in Computer Engineering & Technology*, 2(1).