SMARTFARMER -IOT ENABLED SMART FARMING APPLICATION

NALAYA THIRAN PROJECT BASED LEARNING

Submitted by

Team ID: PNT2022TMID6181

ANBUSELVAMANIKANDAN K	**91762014202**
PANDI A	**91762014211**
DINESH KUMAR K	**91762014206**
VENKATESHWARAN G	**91762014216**

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IN

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1 Introduction:

1.1 overview:

In this project I have developed a mobile application using which a farmer can monitor the temperature, humidity, pressure and soil moisture parameters along with weather forecasting details. Based on these details he can water the crops by controlling the motors through the app . **1.2 Purpose:**

Agriculture plays a crucial role in the life of an economy. It is the backbone of our economic system, so improving the quality and way of production is crucial. Here comes the Smart Agriculture system. Smart agriculture helps in automated farming, collection of data from the field and then analyses it so that the farmer can make accurate decision in order to grow high quality crop.

IoT based Smart Farming improves the entire Agriculture system by monitoring the field in real-time. With the help of sensors and interconnectivity, the Internet of Things in Agriculture has not only saved the time of the farmers but has also reduced the extravagant use of resources such as Water. and Electricity.

2 Literature Survey:

2.1 Existing problem

Agriculture is extremely dependent on the climate. Temperature increases and carbon dioxide can boost some crop yields depending on the location; but other conditions must also exist, such as humidity, pressure, and water availability. Although slight warming and more carbon dioxide in the atmosphere could benefit some plants to grow faster, severe warming, floods, and drought would reduce yields. Farmer need to spend a lot of time to

maintain these.Heat is not the only extreme weather. Extreme cold can benefit farmers by freezing the soil deep beneath the ground. In parts of the upper Midwest, frost depths exceed 40 inches. A deep frost depth can aid farmers in diverse ways. The cold helps nitrogen that is applied in the fall from vaporizing during the winter. The cycle of freezing and thawing of water helps soften the soil after the thaw. Extreme cold and frozen soils also reduce the survival rate of some insects.

Severe weather other than heat and cold can cause loss and devastation to a farm. Most farmers can't avoid the results of extreme weather. Diverse extreme weather can affect farms in different ways. Because of this, it's important that farmers have a proper system and need a mobile application to monitor the weather changes and to control the motor.

2.2 Proposed solution

As the climates are changing rapidly and weather is unpredictable, so farmers are facing difficulties so they need a system to tackle this, here we use "open weather API" to get weather information such as temperature, pressure, humidity and weather description at their current location.

Based on which they can decide whether to turn on the motors or turn off the motor if needed temperature and moisture sensors from IBM simulator is displayed on UI for monitoring the weather. An algorithm developed with threshold values of temperature, pressure, humidity is programmed to intimate the farmer if weather conditions go bad. He can control motors remotely from any place through IoT. Internet interface that allow data inspection and irrigation scheduling to be programmed through mobile application or Node- RED UI. The technological development in software and hardware make it easy to develop this which can make better monitoring and wireless network made it possible to use in monitoring and control of greenhouse parameter in precision agriculture.

2.3 Problem Statement Definition

Customer Problem Statement Template: Raja is a farmer, his son completed Engineering course streamed in Electronic & Communication Engineering. His son gave him the idea to improve agriculture with the help of the technology he learnt. It also helps him in reducing manpower. His son is working on a new idea to improve the irrigation facility, soil fertility and crop rotation. This problem can be actively solved with the help of the application he is building.

I'm	I'm a farmer
I'm trying to	Increase the yield and reduce the labour
But	It increases cost as well as risk in managing.
Because	Of less income and higher expenditure
Which makes me feel	Angry and depressed

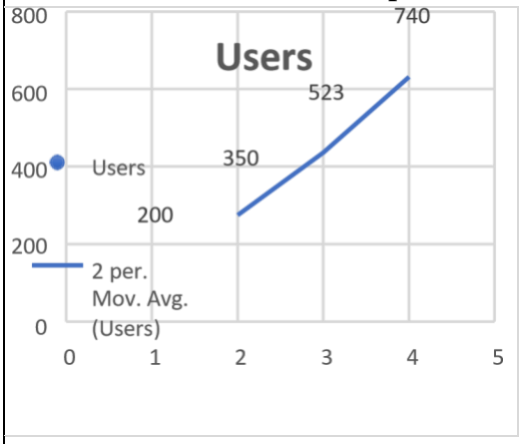
Example:

3 IDEATION & PROPOSED SOLUTION:

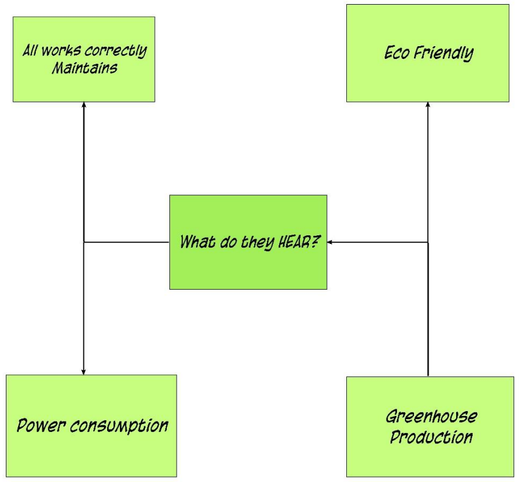
3.3 Proposed Solution:

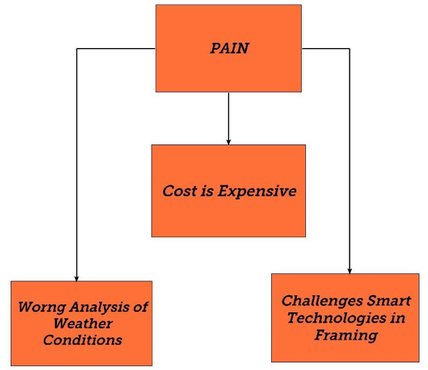
Project team shall fill the following information in proposed solution template.

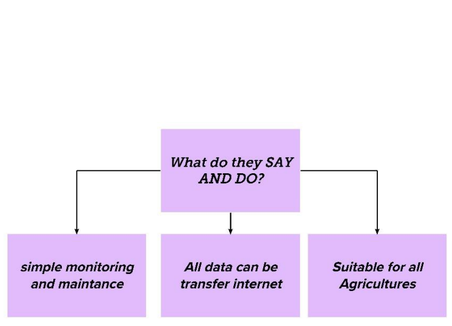
S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	To make farming easier by choosing several constraints in agriculture and to overcome those constraints, to increase production quality and quantity using IOT.
2.	Idea / Solution description	1. Using smart techniques like monitoring farms climate, smart irrigation and soil analysis.
3.	Novelty / Uniqueness	Solar power smart irrigation system which helps you to monitor temperature, moisture ,humidity using smart sensors..

4.	Social Impact / Customer Satisfaction	It is better than the present modern irrigation system by using this method we can control soil erosion. There will be better production yield.
5.	Business Model (Revenue Model)	IoT can also support the growth and sales of e-commerce companies. 
6.	Scalability of the Solution	It is definitely scalable we can increase the constraints when the problem arises.

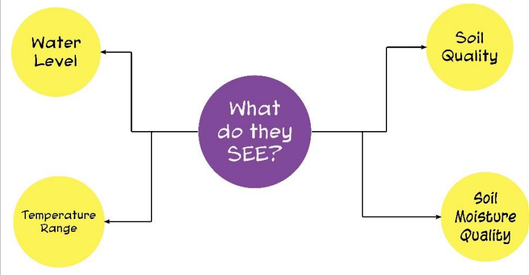
Unnamed

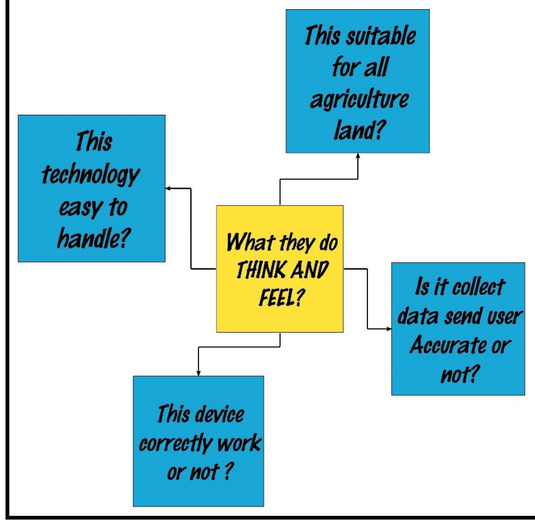


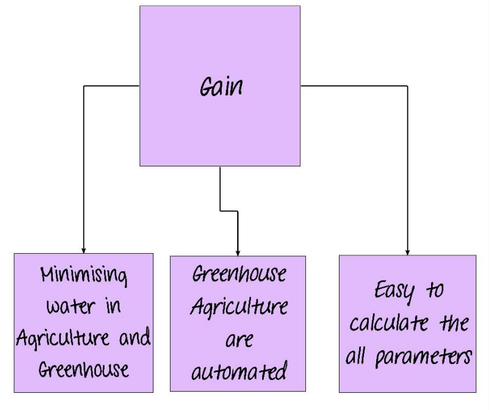




SMART FRAMER IOT ENABLED SMART FRAMING APPLICATION







Brainstorm

& idea prioritization

Use this template in your own brainstorming sessions so your teamcan unleash their imagination and start shaping concepts even if you'renot sitting in the same room.

10 minutes to prepare
1 hour to collaborate
2-8 people recommended

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

10 minutes

A **Team gathering**
Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

B **Set the goal**
Think about the problem you'll be focusing on solving in the brainstorming session.

C **Learn how to use the facilitation tools**
Use the Facilitation Superpowers to run a happy and productive session.

Open article

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

5 minutes

PROBLEM
How might we [your problem statement]?

Key rules of brainstorming

To run an smooth and productive session
Stay in topic. Encourage wild ideas.
Defer judgment. Listen to others.

Go for volume. If possible, be visual.

Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

K.ANBUSELVAMANIKANDAN

TIP
You can select a sticky note and hit the pencil [switch to sketch] icon to start drawing!

G.VENKATESHWARAN

Checkall datafor using application

Reduce animal attacksand maintance cost.

Itisused measure thereading digitally.

In monitoring thenight time.

Itusedto reducethe cost,time andwork

Itisused to monitoring

anywhere

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

TIP
Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

20 minutes

Monitoring cropday andnight time

portect thecrop for animals.

checkthe climate condition

Alldata savedby Farming application.

Itisused measure the digitally.

Anychanges measure valuesalert thefarmer

Prioritize

Your team should all be on the same page about what's important moving [illegible] place your ide[illegible] grid to dete[illegible]hich ideas are [illegible] and which are feasible.

Easyto work farmers

20 minutes

Impo rtanc e

If each of these tasks could get done without any difficulty or cost, which would have

checkall dataand save digitally.

Share template feedback

check waterlevel andsoil condition.

monitor anytime.

After you collaborate

You can export the mural as an image or pdf to share with members of your company who might find it helpful.

Quick add-ons

A **Share the mural**
Share a view link to the mural with stakeholders to keepthem in the loop about the outcomes of the session.

B **Export the mural**
Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save in your drive.

Keep moving forward

Strategy blueprint
Define the components of a new idea or strategy.
Open the template

Customer experience journey map
obstacles for an experience.

Understand customer needs, motivations, and
Open the template

Strengths, weaknesses, opportunities & threats
Identify strengths, weaknesses, opportunities,and threats (SWOT) to develop a plan.

A.PANDI

checkall data daily.

checkthe temperature conditio n

K.DINESHKUMAR

Itisused tocheck weather condition

Anychanges incropor fieldalert farmer.

]Reducethe production costand time

Checkthe water levelin field.

Itisusedto reducethe maintance and surveillance

Checkany diseases attack crop.

Check thesoil condition

checkany diseases attack crop.

Itisused measure the digitally.

the most positive impact?

their re on can ing ng the

TIP

Participants can use cursors to point at wha sticky notes should go t grid. The facilitator confirm the spot by usi laser pointer hold **Ctrl** key on the keyboard

check climate condition.

Feasibility

Open the template

Share template feedback

Template

Regardless of their importance, which tasks are more feasible than others? (Cost, time, effort, complexity, etc.)

Project Title: Smart Farmer-IOT Enabled Smart Farming Application **Project Design Phase-I - Solution Fit Template** **Team ID:** PNT2022TMID06181

Define CS, fit into CC

1. CUSTOMER SEGMENT(S)

CS

Who is your customer?
i.e. working parents of 0-5 y.o. kids

For Framer -It is used to reduce the time and monitoring the crops, weather condition and soil moisture.

6. CUSTOMER CONSTRAINTS

CC

What constraints prevent your customers from taking action or limit their choices
of solutions? i.e. spending power, budget, no cash, network connection, available devices.

1. Proper maintenance should be taken atleast once in a month and this prevent the sensors and any problem.
2. Then any problem occur in the device immediately troubleshoot with the help of technician.

5. AVAILABLE SOLUTIONS

AS

Which solutions are available to the customers when they face the problem

or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? i.e. pen and paper
is an alternative to digital notetaking

Use the sensors to sense the all parameters and any notification with help of GSM module. The sensors any parameter taken and message the customer.

Explore AS, differentiate

Focus on J&P, tap into BE, understand RC

2. JOBS-TO-BE-DONE / PROBLEMS

J&P

Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.

Jobs to be done automatic monitoring the weather conditions and soil moisture. Problems if the any correctly maintain by the crops and devices.

9. PROBLEM ROOT CAUSE

RC

What is the real reason that this problem exists? What is the back story behind the need to do this job?
i.e. customers have to do it because of the change in regulations.

1. Sometimes sensors do not work properly so monitoring process is failed.
2. sometimes notification problems occur by signal problems.

7. BEHAVIOUR

BE

What does your customer do to address the problem and get the job done?

i.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)

1. Monitoring the parameters in the crop's fields.
2. Parameter can be measure and send by the message.
3. Any problem occur immediately send the notification.

Focus on J&P, tap into BE, understand RC

Identify Strong TR & EM

3. TRIGGERS

TR

What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.

Monitoring the crops fields and weather conditions and record the parameter. In case any emergency send the first send notification and next problem parameters.

4. EMOTIONS: BEFORE / AFTER

EM

How do customers feel when they face a problem or a job and afterwards?
i.e. lost, insecure > confident, in control - use it in your communication strategy & design.

1. Before all monitoring process can be maintain by manually and feel some difficult.
2. After all monitoring process is taken by the computer system. Any problem occurs send notification by the customer.

10. YOUR SOLUTION

SL

If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality.
If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.

1. Measure the all parameters and monitoring the daily and any problem occurs immediately send the notification.

8. CHANNELS of BEHAVIOUR

CH

8.1 ONLINE

What kind of actions do customers take online? Extract online channels from #7

Easy to interact the customer and built relationship with customers in proper manner.

8.2 OFFLINE

What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.

Offline process can be some difficult by customers visit the market. Then purchase the product any problem occurs return the product is easy.

Extract online & offline CH of BE

Project Design Phase-I

Solution Architecture

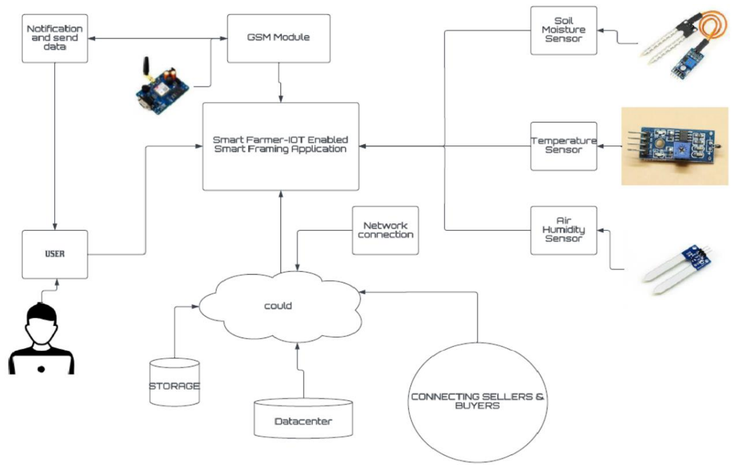
Date	19 September 2022
Team ID	PNT2022TMID06181
Project Name	Project – Smart Farmer- IOT Enabled Smart Farming Application
Maximum Marks	4 Marks

Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems.
- Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.

Example - Solution Architecture Diagram:


Notification and send data
GSM Module
Soil Moisture Sensor
Smart Farmer-IOT Enabled Smart Framing Application
Temperature Sensor
Air Humidity Sensor
Network connection
USER
could
STORAGE
Datacenter
CONNECTING SELLERS & BUYERS

Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	03 October 2022
Team ID	PNT2022TMID06181
Project Name	Project – Smart Farming-IOT Enabled Smart Farming Application
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Sensor Function for framing System	Measure the Temperature and Humidity Measure the Soil Monitoring Check the crop diseases
FR-2	Device send the parameter	Device can be measuring the parameter and send the value for user
FR-3	Alarm System	Any parameter can be change send the alarm Device can be over power send the alarm
FR-4	GSM module	Parameter sending process used by GSM module Sending process is speed for anytime.

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	It helps farmers to better important factors such as water, topography, aspect, vegetation and soil types
NFR-2	**Security**	The set of protocols, and technologies use the data to monitor automate farming activities and storage, management and data processing combined with internet connectivity bring several issues and security threats
NFR-3	**Reliability**	Smart Farming can improve sustainability. From reducing spray wastage to improving fuel economy. By reducing the number of passes needed to complete tasks and reducing turning on the headlandsoil compaction is minimised
NFR-4	**Performance**	Smart Farming device can be easy working. There are many ways smart devices can help you increase your farm's performance and revenue.
NFR-5	**Availability**	This device can be available is any platforms. All components for placed in the device.
NFR-6	**Scalability**	Scalability is another requirement that should be considered in a smart farming platform. Scalability refers to the ability to increase available resources and system capability without the need to go througha major system redesign or implementation.

Project Design Phase-II Technology Stack
(Architecture & Stack)

Date	15 October 2022
Team ID	PNT2022TMID06950
Project Name	Project – Smart Farmer-IOT Enabled Smart Farming Application
Maximum Marks	4 Marks

Technical architecture:

Figure: Smart Farmer-IOT Enabled Smart Farming Application

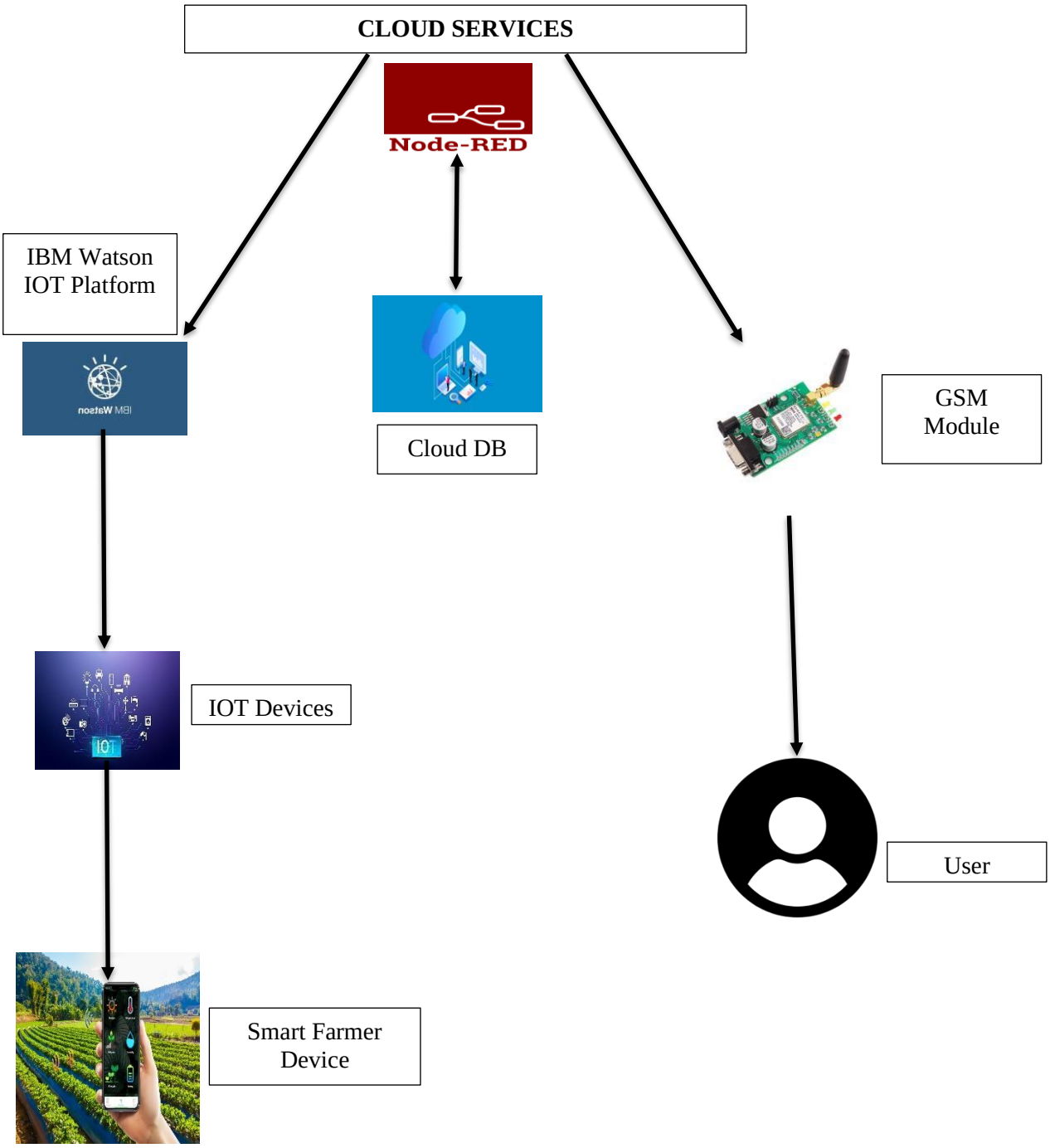


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	User register and we can able to view the other device. ex: using web UI, mobile app etc.,	HTML, CSS, JavaScript
2.	IOT Application Logic-1	Owner's device should be connected to the system	Python
3.	IOT Application Logic-2	Owner's device should be in on condition	IBM Watson STT service
4.	IOT Application Logic-3	If Crop field any changes is detected the notification message is send to the farmer	IBM Watson Assistant
5.	Database	Data type can be any form such as text, User defined blob of data sentfrom cloud IOT core device etc.,	SQ lite, In Flux DB
6.	File Storage	File with be labelled with what they contain and how long they should be kept	IBM Block Storage or Local File system
7.	External API-1	Purpose of External API used in the device is to use the internet for communicating and conducting allotted operations efficiency.	Aadhar API, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Device that removes much of the manual work needed to write and configure code. It provides rapid development, iseasy to setup and has a strong support base	IOT Zeta for nonstop streaming of detectinggas leakage level.
2.	Security Implementations	Alert notification Enabled with in gps module received in Farmermobile.	e.g., SHA-256, Encryptionsof data regarding gas level, firewalls, Antivirus, data loss prevention etc.,
3.	Scalable Architecture	If any problems arise the field and farmer see the problem in mobile application	Multiple Data store Technologies, Reliable,Micro services Automated Bootstrapping
4.	Availability	Sensor to detect the changes condition and send to application see the values	GSM module, raspberry pi

S.No	Characteristics	Description	Technology
5.	Performance	The alert notification is sent the owner without any delay when any changes sensor values are detected. Immediate takes the actions	High durable device battery

SPRINT-1

Date	19 November 2022
Team ID	PNT2022TMID06181
Project Name	Project – Smart Farmer- IOT Enabled Smart Farming Application

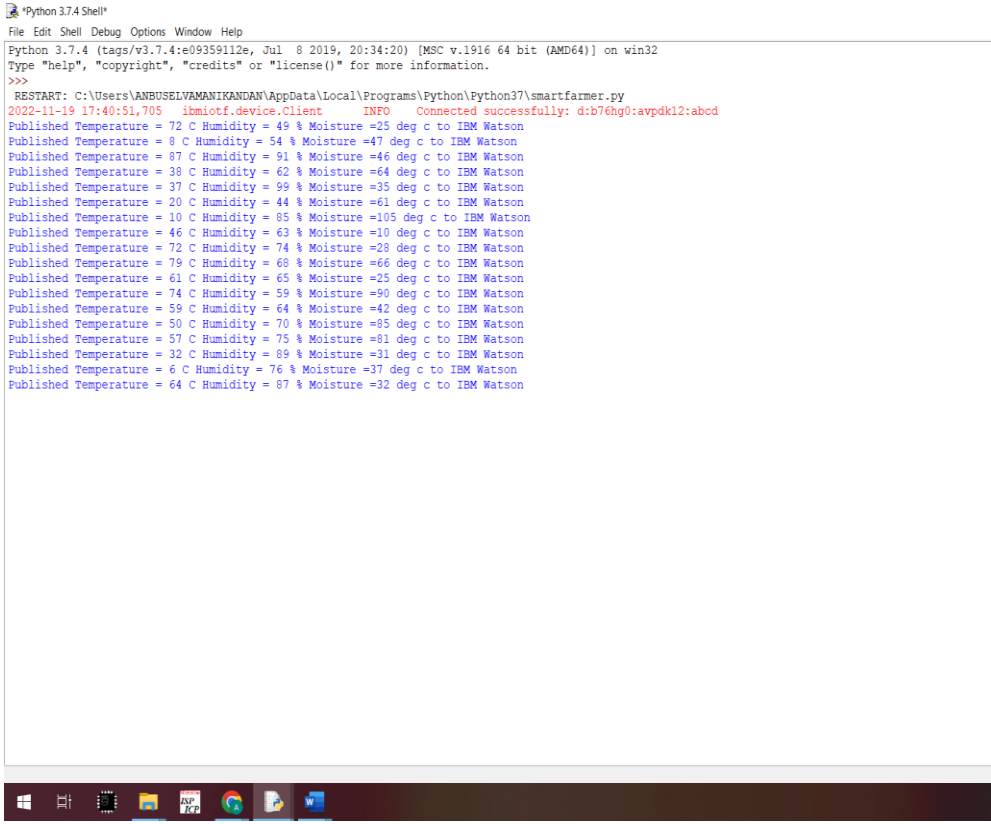
PYTHON CODE:

```
import time
import sys
import ibmiotf.application
import ibmiotf.device
import random
#Provide your IBM Waston Device Credentials
organization="b76hg0"
deviceType="avpdk12"
deviceId="abcd"
authMethod="token"
authToken="123456789"
# Initialize GPIO
def myCommandCallback(cmd):
    print("message received from IBM Iot platform: %s" % cmd.data['command'])
    status=cmd.data['command']
    if status=="motoron":
        print ("motor is on")
    elif status == "motoroff":
        print ("motor is off")
    else :
        print ("please send proper command")


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

```
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 deviceCli.connect()
deviceCli.connect()
while True:
    #Get Sensor Data from DHT11
    temp=random.randint(0,100)
    Humid=random.randint(40,100)
    Mois=random.randint(10,110)
    data = { 'temp' : temp, 'Humid': Humid , 'Mois': Mois}
    #print data          def myOnPublishCallback():
    def myOnPublishCallback():
        print("Published Temperature = %s C" % temp, "Humidity = %s %%" % Humid, "Moisture =%s deg c" % Mois, "to IBM Watson")

    success = deviceCli.publishEvent("IoTSensor", "json", data, qos=0, on_publish=myOnPublishCallback)
    if not success:
        print("Not connected to IoTF")
    time.sleep(10)
    deviceCli.commandCallback = myCommandCallback
# Disconnect the device and application from the cloud deviceCli.disconnect()
deviceCli.disconnect()
```

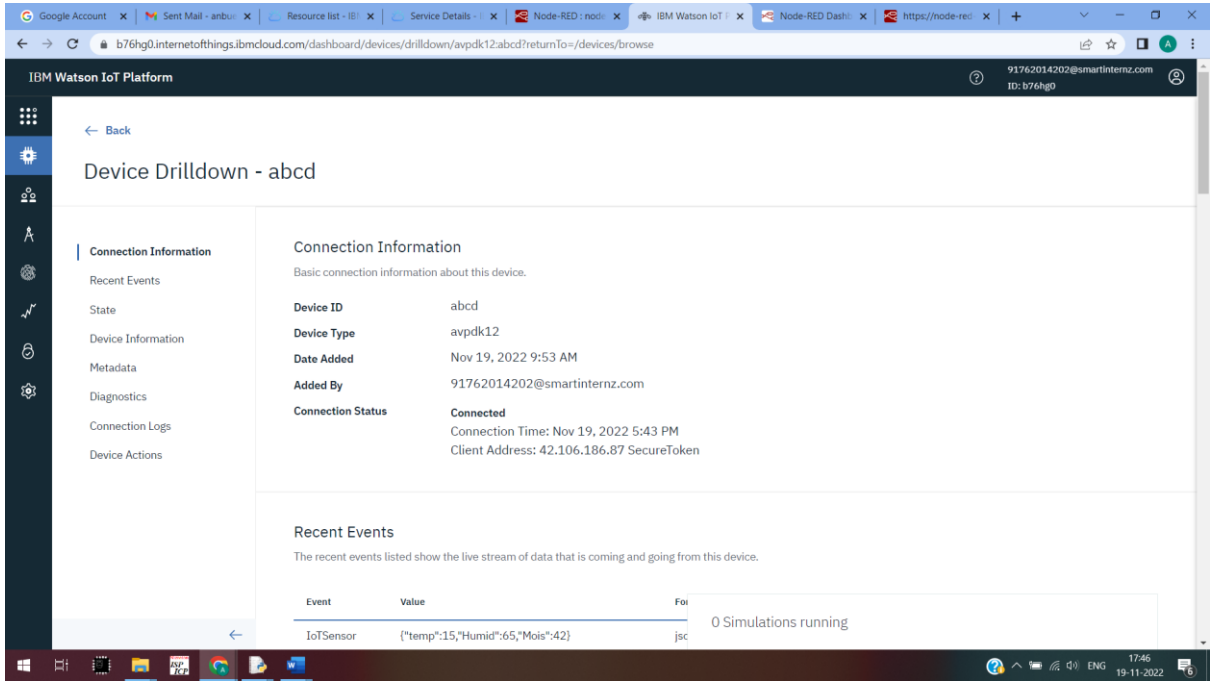
OUTPUT:

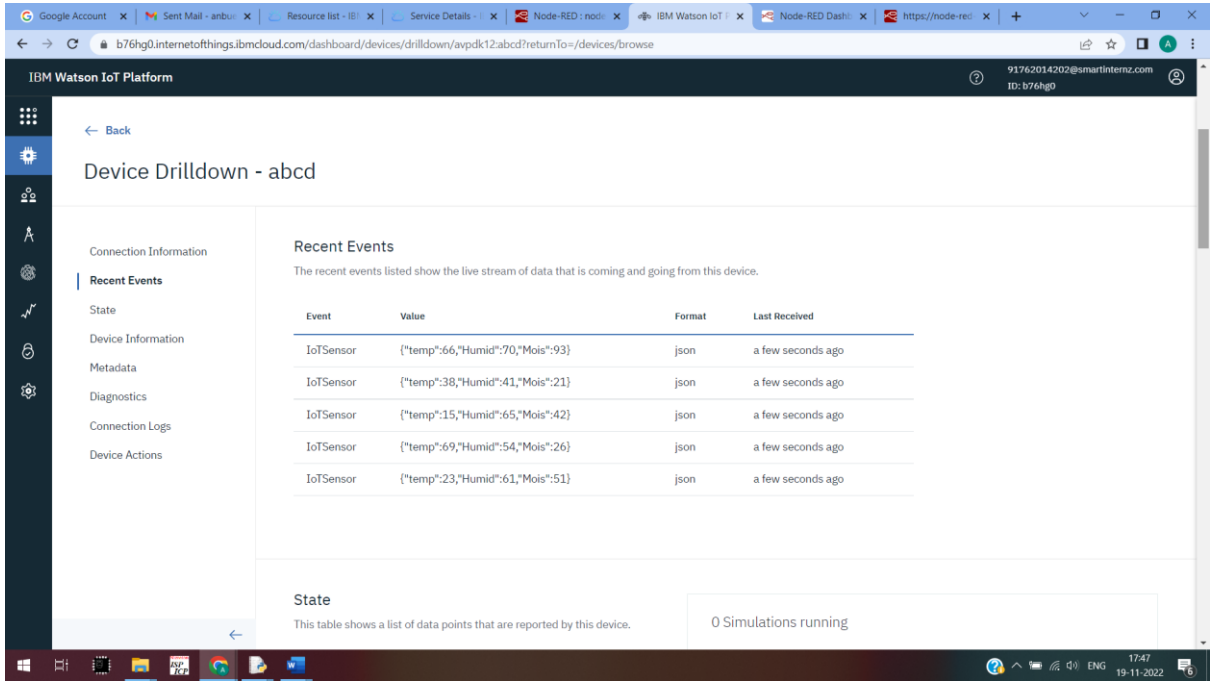
Date	19 November 2022
Team ID	PNT2022TMID06181
Project Name	Project – Smart Farmer- IOT Enabled Smart Farming Application

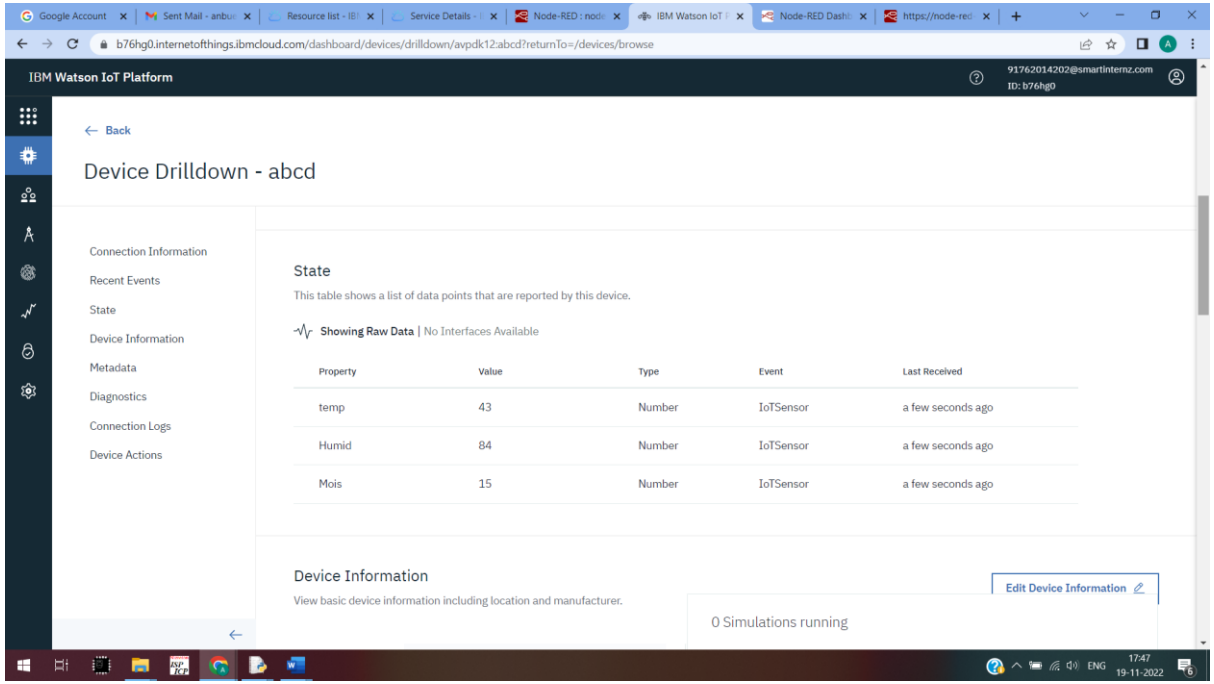


SPRINT-II

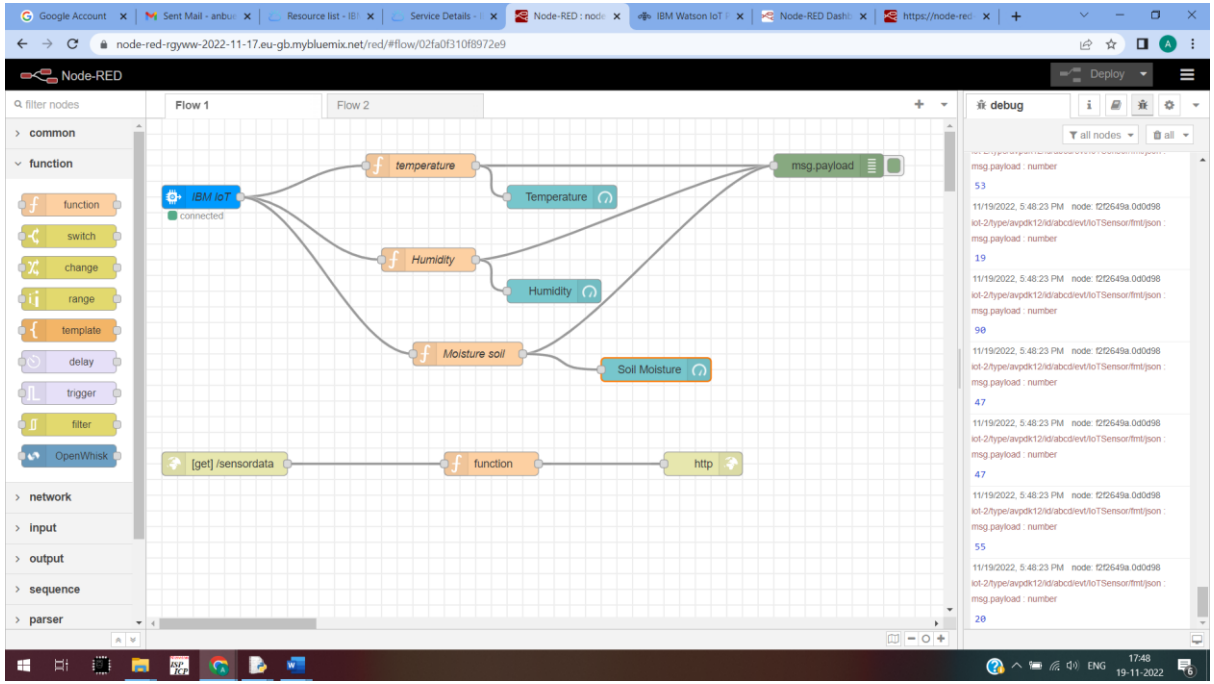
IBM WATSON PLATFORM:

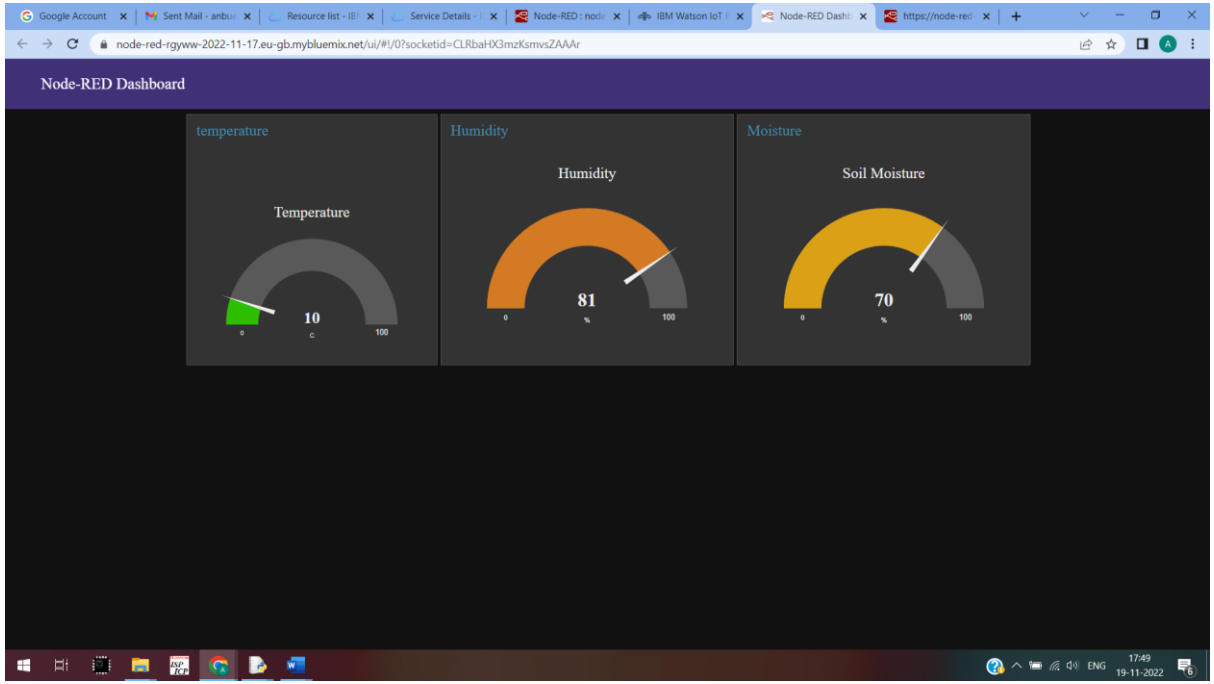

IBM Watson IoT Platform
91762014202@smartinternz.com
ID: b76hg0
Back
Device Drilldown - abcd
Connection Information
Recent Events
State
Device Information
Metadata
Diagnostics
Connection Logs
Device Actions
Connection Information
Basic connection information about this device.
Device ID
abcd
Device Type
avpdk12
Date Added
Nov 19, 2022 9:53 AM
Added By
91762014202@smartinternz.com
Connection Status
Connected
Connection Time: Nov 19, 2022 5:43 PM
Client Address: 42.106.186.87 SecureToken
Recent Events
The recent events listed show the live stream of data that is coming and going from this device.
Event
Value
IoTSensor
{"temp":15,"Humid":65,"Mois":42}
0 Simulations running
ENG
17:46
19-11-2022


Google Account
Sent Mail - anbu
Resource list - IBI
Service Details -
Node-RED : node
IBM Watson IoT
Node-RED Dashb
https://node-red
b76hg0.internetofthings.ibmcloud.com/dashboard/devices/drilldown/avpdk12:abcd?returnTo=/devices/browse
IBM Watson IoT Platform
91762014202@smartinternz.com
ID: b76hg0
Back
Device Drilldown - abcd
Connection Information
Recent Events
State
Device Information
Metadata
Diagnostics
Connection Logs
Device Actions
Recent Events
The recent events listed show the live stream of data that is coming and going from this device.
Event
Value
Format
Last Received
IoTSensor
{"temp":66,"Humid":70,"Mois":93}
json
a few seconds ago
IoTSensor
{"temp":38,"Humid":41,"Mois":21}
json
a few seconds ago
IoTSensor
{"temp":15,"Humid":65,"Mois":42}
json
a few seconds ago
IoTSensor
{"temp":69,"Humid":54,"Mois":26}
json
a few seconds ago
IoTSensor
{"temp":23,"Humid":61,"Mois":51}
json
a few seconds ago
State
This table shows a list of data points that are reported by this device.
0 Simulations running
ENG
17:47
19-11-2022


IBM Watson IoT Platform
91762014202@smartinternz.com
ID: b76hg0
Back
Device Drilldown - abcd
Connection Information
Recent Events
State
Device Information
Metadata
Diagnostics
Connection Logs
Device Actions
State
This table shows a list of data points that are reported by this device.
Showing Raw Data | No Interfaces Available
Property
Value
Type
Event
Last Received
temp
43
Number
IoTSensor
a few seconds ago
Humid
84
Number
IoTSensor
a few seconds ago
Mois
15
Number
IoTSensor
a few seconds ago
Device Information
View basic device information including location and manufacturer.
Edit Device Information
0 Simulations running

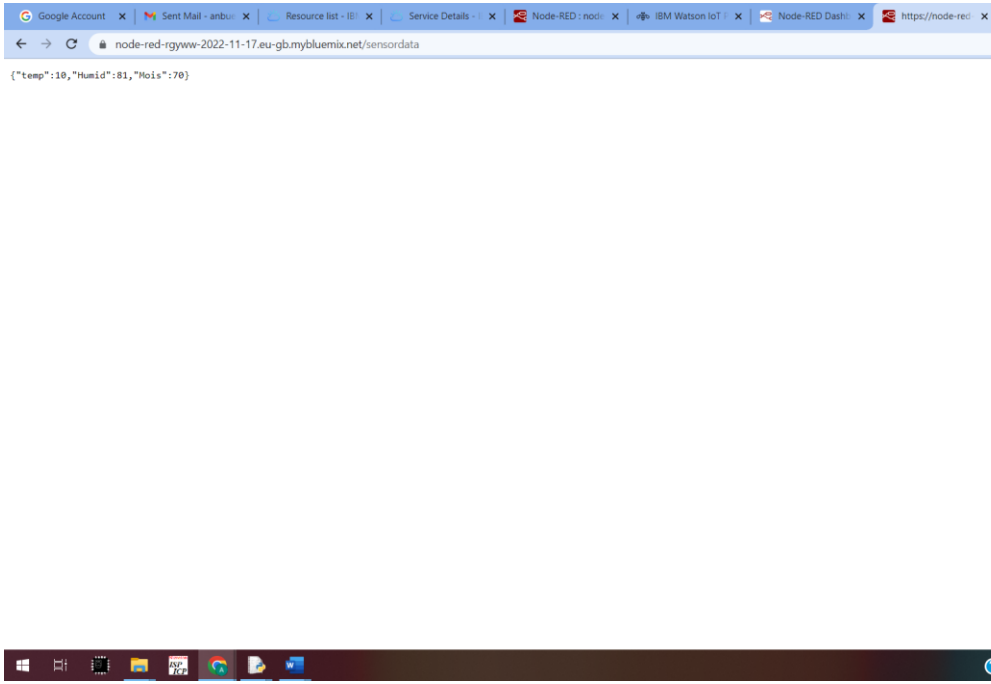
NODE RED:


Node-RED
Deploy
Flow 1
Flow 2
filter nodes
common
function
function
switch
change
range
template
delay
trigger
filter
OpenWhisk
network
input
output
sequence
parser
IBM IoT
connected
temperature
Temperature
Humidity
Humidity
Moisture soil
Soil Moisture
msg.payload
[get] /sensordata
function
http
debug
all nodes
all
msg.payload : number
53
11/19/2022, 5:48:23 PM node: f2f2649a.0d0d98
iot-2/type/avpdk12/id/abcd/evt/IoTSensor/fmt/json : msg.payload : number
19
11/19/2022, 5:48:23 PM node: f2f2649a.0d0d98
iot-2/type/avpdk12/id/abcd/evt/IoTSensor/fmt/json : msg.payload : number
90
11/19/2022, 5:48:23 PM node: f2f2649a.0d0d98
iot-2/type/avpdk12/id/abcd/evt/IoTSensor/fmt/json : msg.payload : number
47
11/19/2022, 5:48:23 PM node: f2f2649a.0d0d98
iot-2/type/avpdk12/id/abcd/evt/IoTSensor/fmt/json : msg.payload : number
47
11/19/2022, 5:48:23 PM node: f2f2649a.0d0d98
iot-2/type/avpdk12/id/abcd/evt/IoTSensor/fmt/json : msg.payload : number
55
11/19/2022, 5:48:23 PM node: f2f2649a.0d0d98
iot-2/type/avpdk12/id/abcd/evt/IoTSensor/fmt/json : msg.payload : number
20
ENG
17:48
19-11-2022



OUTPUT FOR SENSOR DATA:

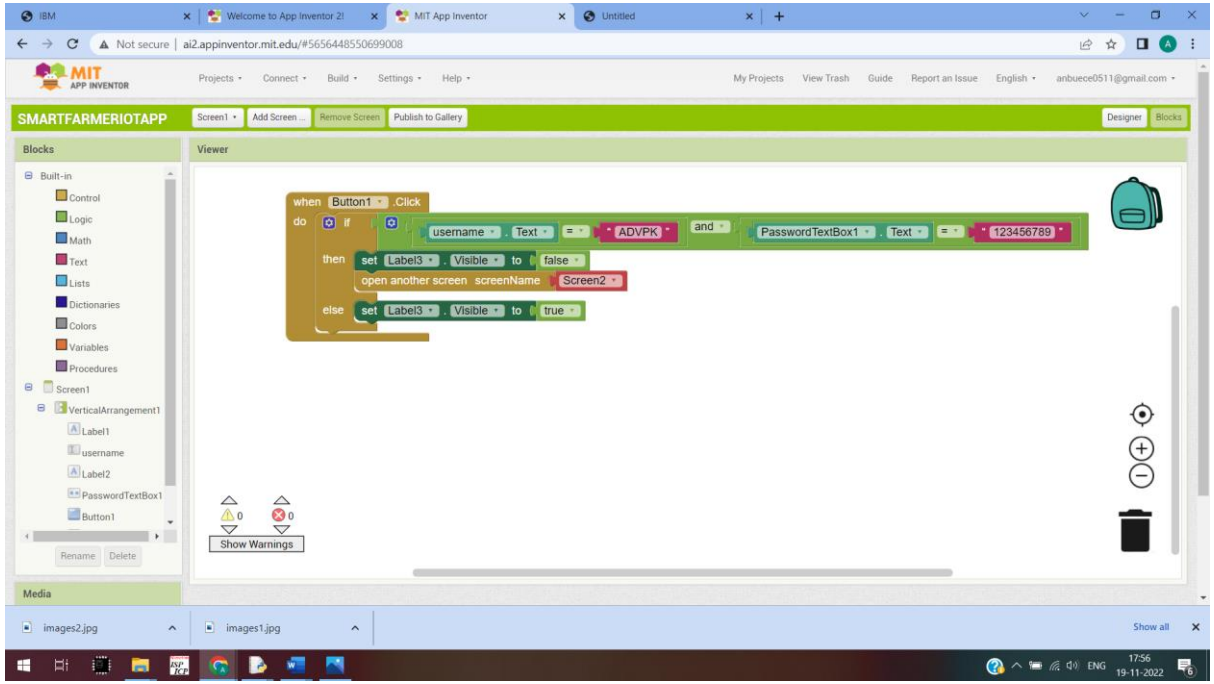
Date	19 November 2022
Team ID	PNT2022TMID06181
Project Name	Project – Smart Farmer- IOT Enabled Smart Farming Application

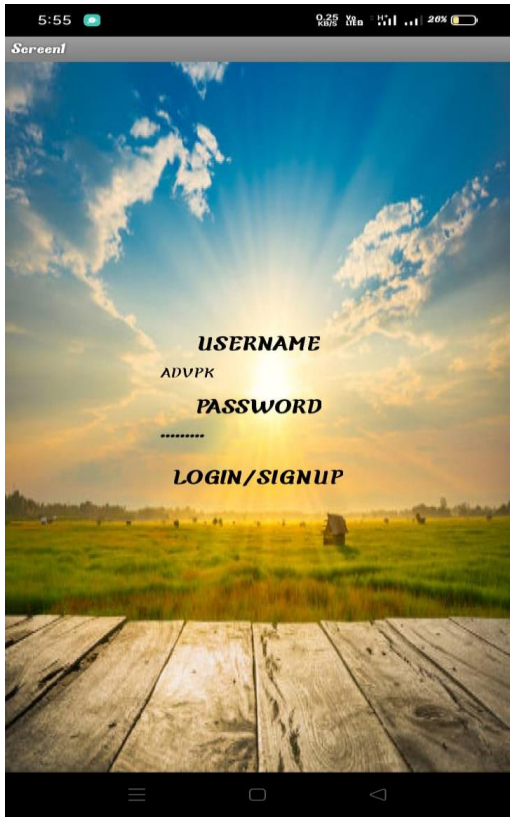


SPRINT-III

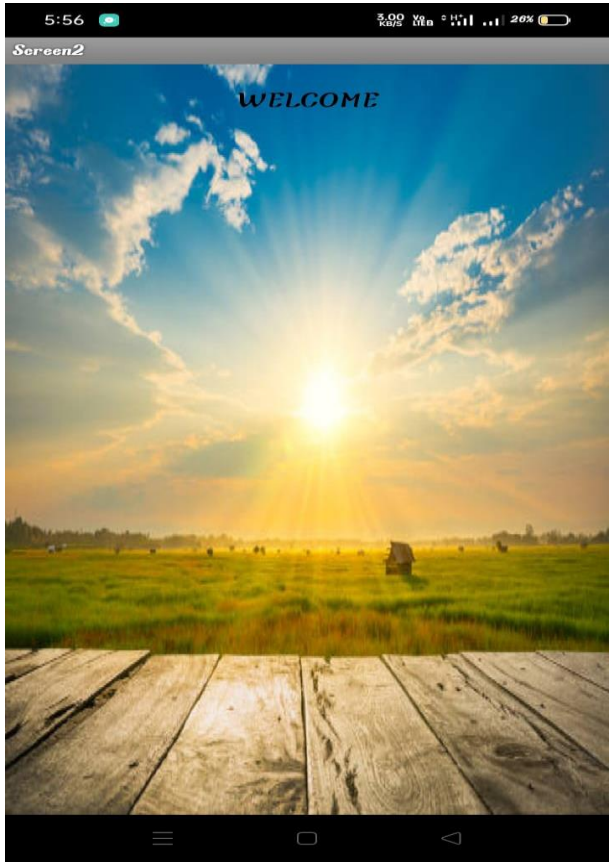
MOBILE APP:
SCREEN-1

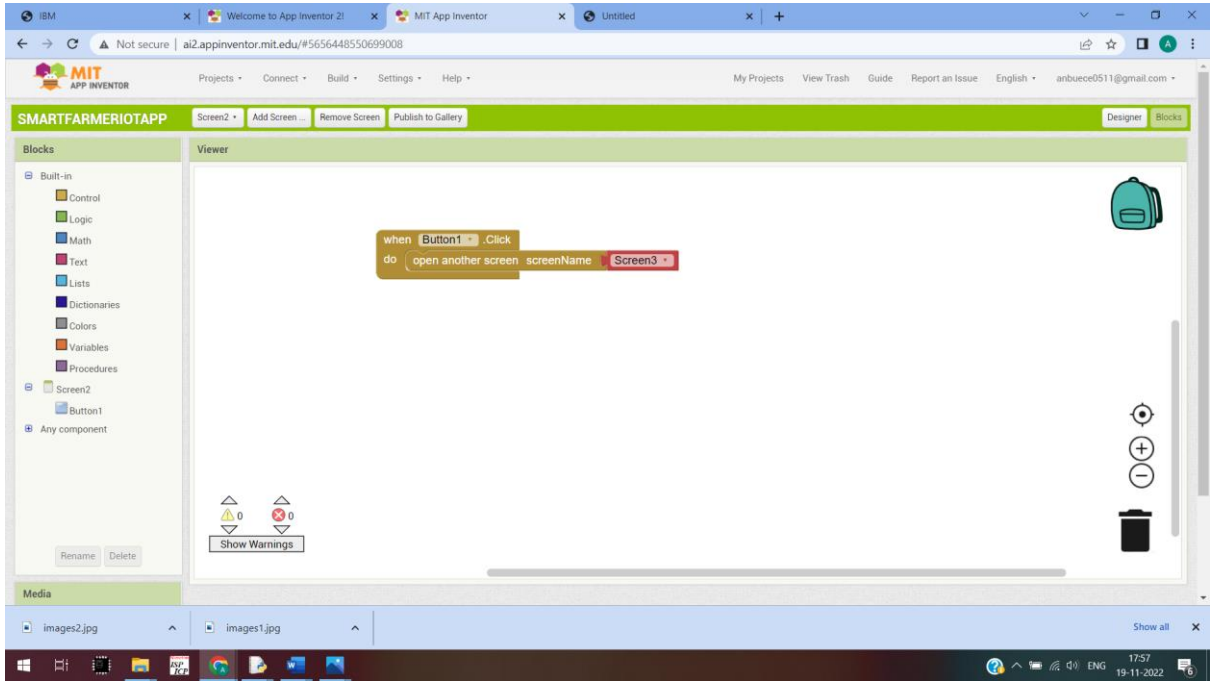

5:54
Screen1
USERNAME
Hint for TextBox1
PASSWORD
LOGIN/SIGNUP
Incorrect


IBM
Welcome to App Inventor 2!
MIT App Inventor
Untitled
Not secure | ai2.appinventor.mit.edu/#5656448550699008
MIT APP INVENTOR
Projects
Connect
Build
Settings
Help
My Projects
View Trash
Guide
Report an Issue
English
anbuece0511@gmail.com
SMARTFARMERIOTAPP
Screen1
Add Screen ...
Remove Screen
Publish to Gallery
Designer
Blocks
Blocks
Viewer
Built-in
Control
Logic
Math
Text
Lists
Dictionaries
Colors
Variables
Procedures
Screen1
VerticalArrangement1
Label1
username
Label2
PasswordTextBox1
Button1
Rename
Delete
when Button1 .Click
do if username . Text = " ADVPK " and PasswordTextBox1 . Text = " 123456789 "
then set Label3 . Visible to false
open another screen screenName Screen2
else set Label3 . Visible to true
0
0
Show Warnings
Media
images2.jpg
images1.jpg
Show all
ENG
17:56
19-11-2022

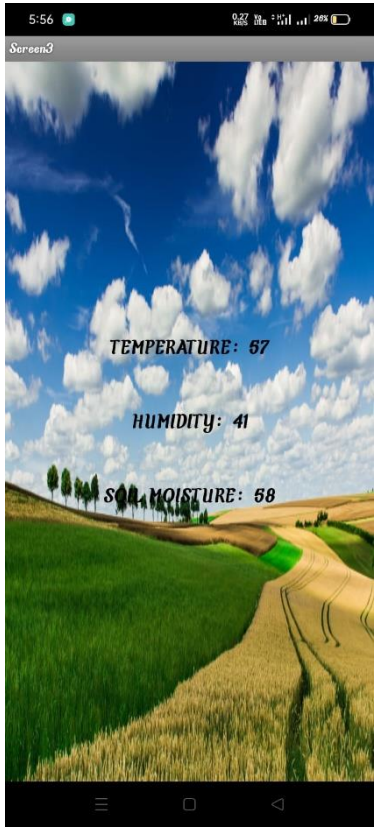


SCREEN-2

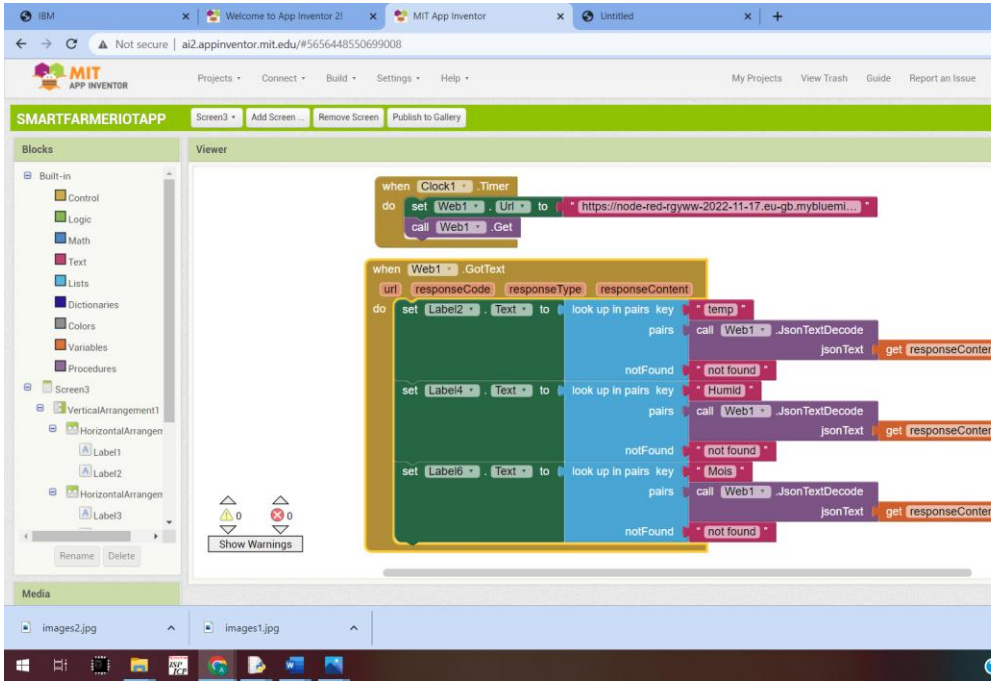

5:56
3.00 KB/S
20%
Screen2
WELCOME


IBM
Welcome to App Inventor 2!
MIT App Inventor
Untitled
Not secure | ai2.appinventor.mit.edu/#5656448550699008
MIT APP INVENTOR
Projects
Connect
Build
Settings
Help
My Projects
View Trash
Guide
Report an Issue
English
anbuece0511@gmail.com
SMARTFARMERIOTAPP
Screen2
Add Screen ...
Remove Screen
Publish to Gallery
Designer
Blocks
Blocks
Built-in
Control
Logic
Math
Text
Lists
Dictionaries
Colors
Variables
Procedures
Screen2
Button1
Any component
Rename
Delete
Media
Viewer
when Button1 .Click
do open another screen screenName Screen3
Show Warnings
images2.jpg
images1.jpg
Show all
ENG
17:57
19-11-2022

SCREEN-3

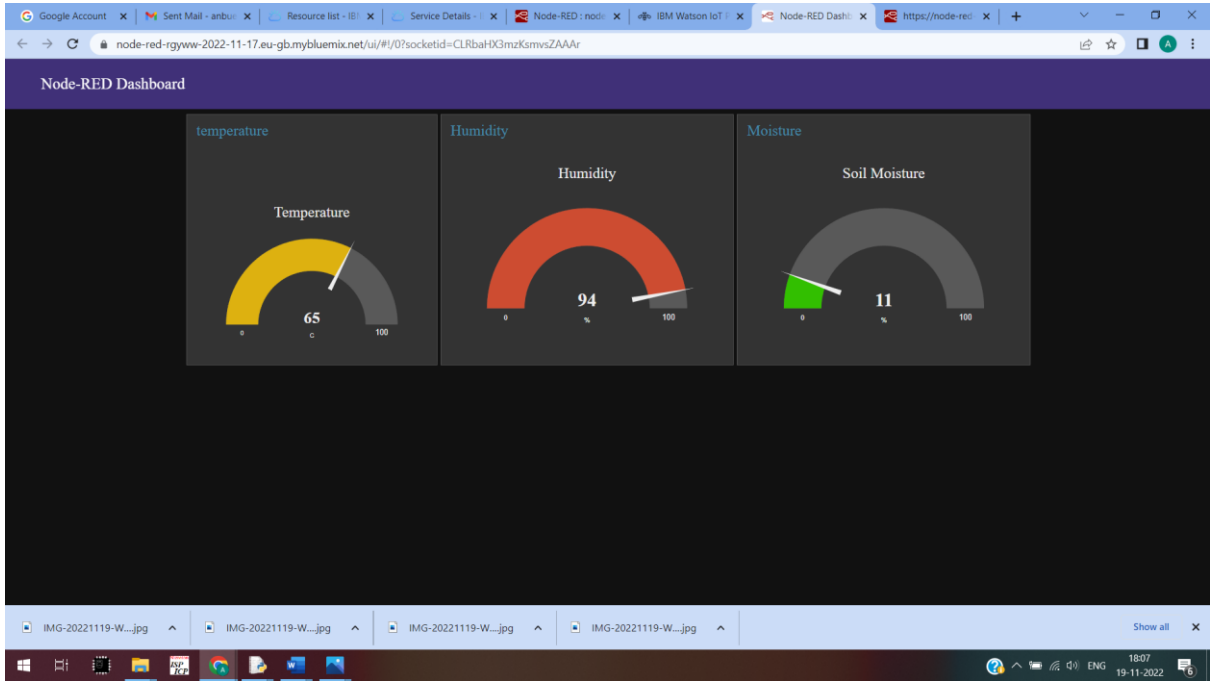

5:56
Screen3
TEMPERATURE: 57
HUMIDITY: 41
SOIL MOISTURE: 58

Date	19 November 2022
Team ID	PNT2022TMID06181
Project Name	Project – Smart Farmer- IOT Enabled Smart Farming Application

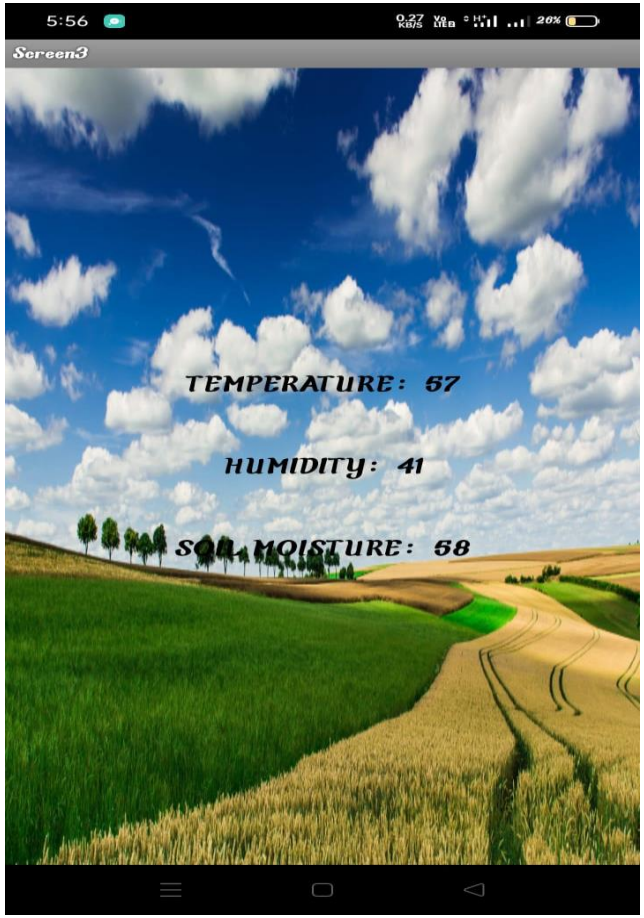


SPRINT-4

NODE RED APP:


Node-RED Dashboard
temperature
Temperature
65
0
100
Humidity
Humidity
94
0
100
Moisture
Soil Moisture
11
0
100

SOFTWARE:


5:56
Screen3
TEMPERATURE: 57
HUMIDITY: 41
SOIL MOISTURE: 58

5. PROJECT PLANNING & SCHEDULING

5.1 Sprint Planning, Estimation & Schedule

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	7 Days	30 Oct 2022	06 Nov 2022	20	29 Oct 2022
Sprint-2	20	9 Days	31 Oct 2022	09 Nov 2022		05 Oct 2022

Sprint-3	20	6 Days	06 Nov 2022	13 Nov 2022		12 Oct 2022

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Simulation creation	USN-1	python code	2	High	Dhananjeyan Vignesh
Sprint-2	Software	USN-2	Creating device in the IBM Watson IoT platform, workflow for IoT scenarios using Node-Red	2	High	Vignesh Aasif Ashwanth
Sprint-3	MIT App Inventor	USN-3	Develop an application for the Smart farmer project using MIT App Inventor	2	High	Dhananjeyan Ashwanth
Sprint-3	Dashboard	USN-3	Design the Modules and test the app	2	High	Dhananjeyan, Vignesh
Sprint-4	Web UI	USN-4	To make the user to interact with software.	2	High	Aasif Ashwanth

Project Tracker, Velocity & Burndown Chart: (4 Marks)

Sprint-4	20	6 Days	11 Nov 2022	17 Nov 2022		15 Oct 2022

5.2 Milestone and Activity List

Title	Description	Date
Literature Survey & Information Gathering	Literature survey on the selected project & gathering information by referring the, technical papers, research publications etc.	09 OCTOBER 2022
Prepare Empathy Map	Prepare Empathy Map Canvas to capture the user Pains & Gains, Prepare list of problem statements.	09 OCTOBER 2022
Brainstorming ideas	List the ideas by organizing the brainstorming session and prioritize the top 3 ideas based on the feasibility & importance.	09 OCTOBER 2022
Proposed Solution	Prepare the proposed solution document, which includes the novelty, feasibility of idea, business model, social impact, scalability of solution, etc.	19 OCTOBER 2022
Problem Solution Fit	Prepare problem - solution Fit document.	19 0CTOBER 2022
Solution Architecture	Prepare solution Architecture document.	23 OCTOBER 2022
Customer Journey	Prepare the customer journey maps to understand the user interactions & experiences with the application	24 OCTOBER 2022
Data Flow Diagrams	Draw the data flow Diagrams and submit for review.	24 OCTOBER 2022
Technology Architecture	Architecture diagram.	25 OCTOBER 2022
Sprint Delivery	Prepare the Sprint delivery on Number of Sprint planning meetings organized, Minutes of meeting recorded.	04 NOVEMBER 2022
Milestone & Activity List	Prepare the milestones & Activity list of the project.	04 NOVEMBER 2022

Project Development Delivery of Sprints	Develop & submit the developed code by testing it.	14 NOVEMBER 2022

9. RESULT:

9.1 PERFORMANCE METRICS

Hence a helpful and useful system is built for farmers to assist them in farming and also prevent them from natural calamities. It also saves farmers time to maintain all these things as this is working on cloud he can turn on/off motor from anywhere so basically it helps farmers and make them relived thus helping our economy to grow.

10.ADVANTAGES & DISADVANTAGES:

Advantage:

- monitoring weather parameters such as temperature, pressure, humidity, soil moisture remotely controlling motors easily through buttons
- alert farmers in case of any calamities

- threshold values are set any anomalies will be reported to the farmer
- user friendly and efficient
- low cost **Disadvantage:**
- sensors may sometime malfunction
- maybe inaccurate sometimes
- farmer needs internet connectivity
- farmer must have a phone and have basic knowledge to operate it **Applications:**
- Monitoring of Climate Conditions -Probably the most popular smart agriculture gadgets are weather stations, combining various smart farming sensors. Located across the field, they collect various data from the environment and send it to the cloud. The provided measurements can be used to map the climate conditions, choose the appropriate crops, and take the required measures to improve their capacity (i.e. precision farming).
- Greenhouse Automation-In addition to sourcing environmental data, weather stations can automatically adjust the conditions to match the given parameters. Specifically, greenhouse automation systems use a similar principle.
- Crop Management - One more type of IoT product in agriculture and another element of precision farming is crop management devices. Just like weather stations, they should be placed in the field to collect data specific to crop farming; from temperature and precipitation to leaf water potential and overall crop health, these can all be used to readily collect data and information for improved farming practices.
- Cattle Monitoring and Management-Just like crop monitoring, there are IoT agriculture sensors that can be attached to the animals on a farm to monitor their health and log performance. This works similarly to IoT devices for pet care.

- End-to-End Farm Management Systems-A more complex approach to IoT products in agriculture can be represented by the so-called farm productivity management systems. They usually include a number of agriculture IoT devices and sensors, installed on the premises as well as a powerful dashboard with analytical capabilities and in-built accounting/reporting features.

11.CONCLUSION:

Smart Farming and IoT-driven agriculture are paving the way for what can be called a Third Green Revolution.The Third Green Revolution is taking over agriculture. That revolution draws upon the combined application of data-driven analytics technologies, such as precision farming equipment, IoT, "big data" analytics, Unmanned Aerial Vehicles (UAVs or drones), robotics, etc.

In the future this smart farming revolution depicts, pesticide and fertilizer use will drop while overall efficiency will rise. IoT technologies will enable better food traceability, which in turn will lead to increased food safety. It will also be beneficial for the environment, for example, more efficient use of water, or optimization of treatments and inputs.Therefore, smart farming has a real potential to deliver a more productive and sustainable form of agricultural production, based on a more precise and resource-efficient approach. New farms will finally realize the eternal dream of mankind.

12.FUTURE SCOPE:

With the exponential growth of world population, according to the UN Food and Agriculture Organization, the world will need to produce 70% more food in 2050, shrinking agricultural lands, and depletion of finite natural resources, the need to enhance farm yield has become critical. Limited availability of natural resources such as fresh water and arable land along with slowing yield trends in several staple crops, have further aggravated the problem. Another impeding concern over

the farming industry is the shifting structure of agricultural workforce. Moreover, agricultural labor in most of the countries has declined. As a result of the declining agricultural workforce, adoption of internet connectivity solutions in farming practices has been triggered, to reduce the need for manual labor.IoT solutions are focused on helping farmers close the supply demand gap, by ensuring high yields, profitability, and protection of the environment. The approach of using IoT technology to ensure optimum application of resources to achieve high crop yields and reduce operational costs is called precision agriculture. IoT in agriculture technologies comprise specialized equipment, wireless connectivity, software and IT services.

13 APPENDIX:

Github repository link:

https://github.com/IBM-EPBL/IBM-Project- 15090-1659594119

Demo link:

https://youtu.be/CGM51MArL1s