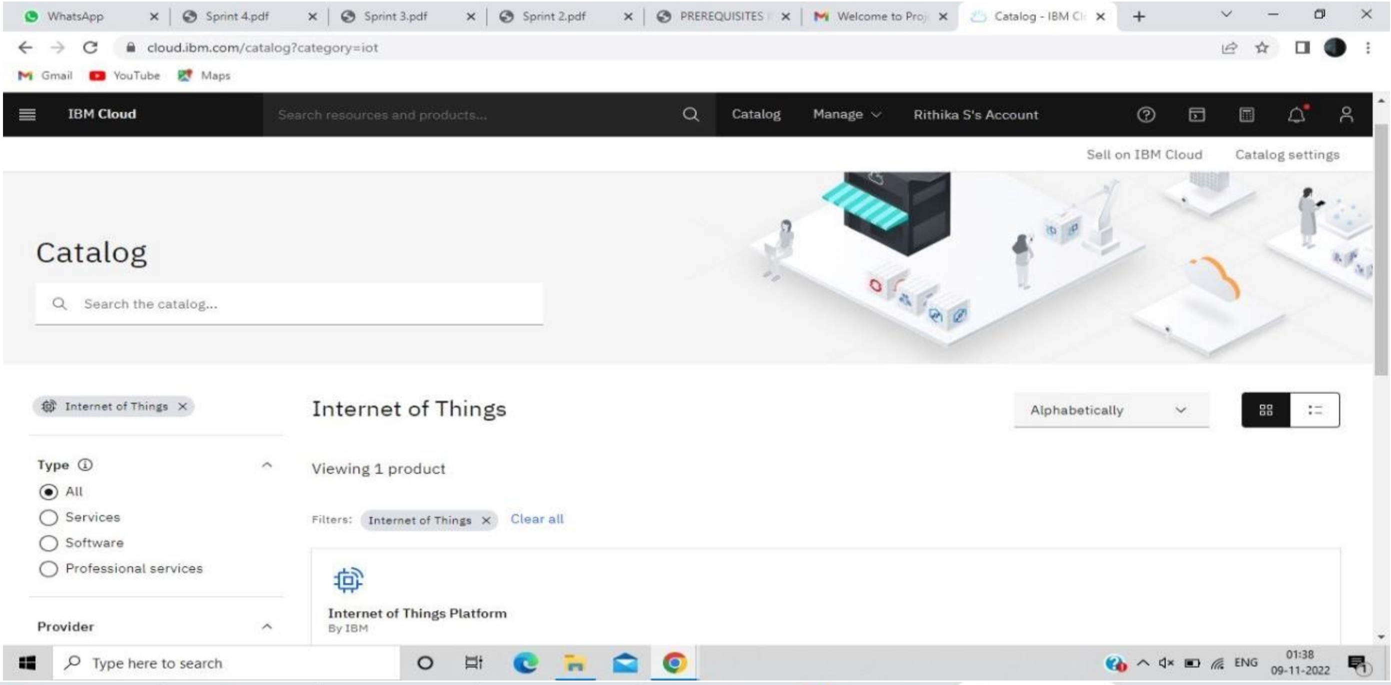
SPRINT-1

Date	10 November 2022
Team Id	PNT2022TMID28957
Project Name	IOT Based smart crop protection system for agriculture
Maximum mark	20 marks

IBM WATSON CLOUD



Catalog

Search the catalog...

Internet of Things ×

Internet of Things

Alphabetically

Type ⓘ

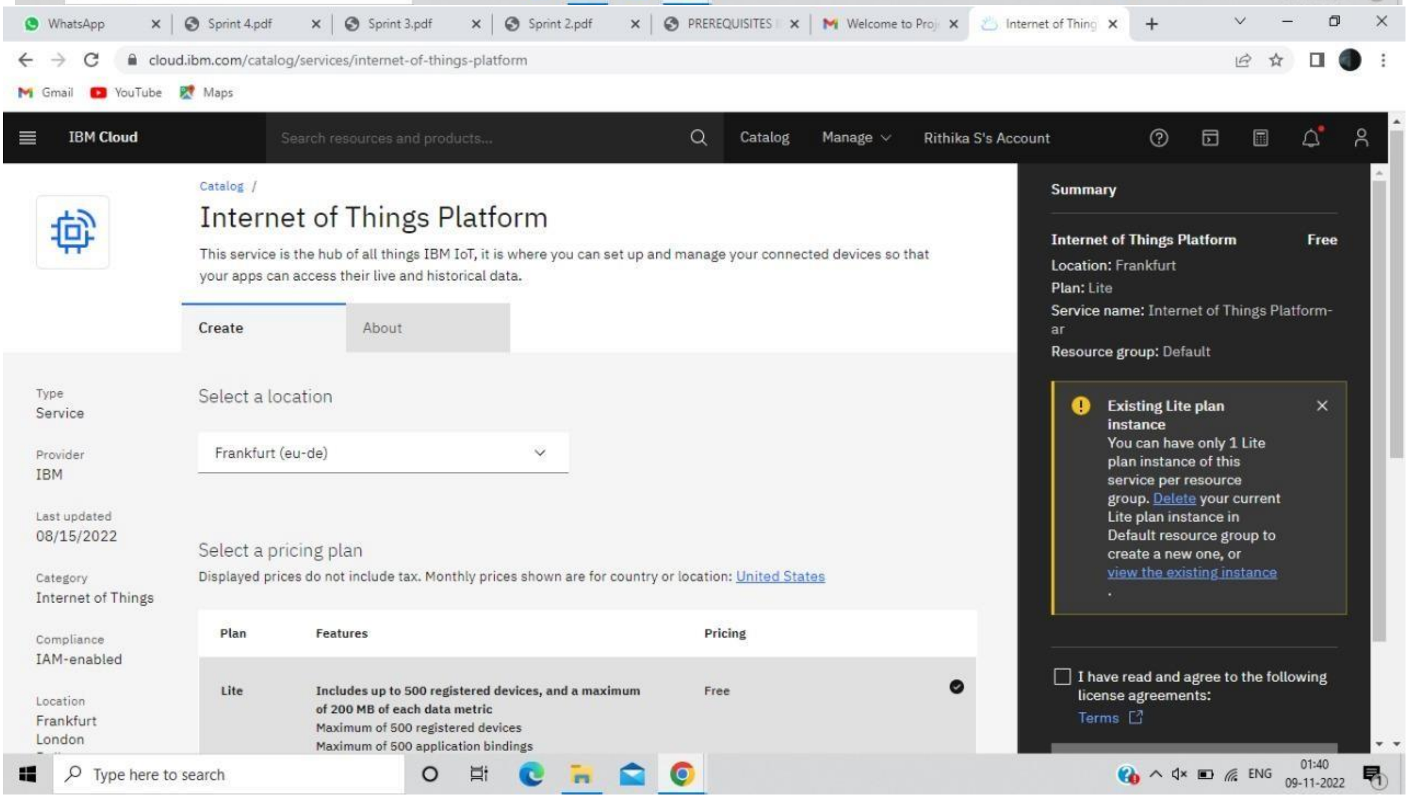
- ● All
- ○ Services
- ○ Software
- ○ Professional services

Provider

Viewing 1 product

Filters: Internet of Things × Clear all

Internet of Things Platform
By IBM



Catalog /

Internet of Things Platform

This service is the hub of all things IBM IoT, it is where you can set up and manage your connected devices so that your apps can access their live and historical data.

Create | About

Type
Service

Provider
IBM

Last updated
08/15/2022

Category
Internet of Things

Compliance
IAM-enabled

Location
Frankfurt
London

Select a location

Frankfurt (eu-de)

Select a pricing plan

Displayed prices do not include tax. Monthly prices shown are for country or location: United States

Plan	Features	Pricing
Lite	**Includes up to 500 registered devices, and a maximum of 200 MB of each data metric** Maximum of 500 registered devices Maximum of 500 application bindings	Free ●

Summary

Internet of Things Platform Free

Location: Frankfurt

Plan: Lite

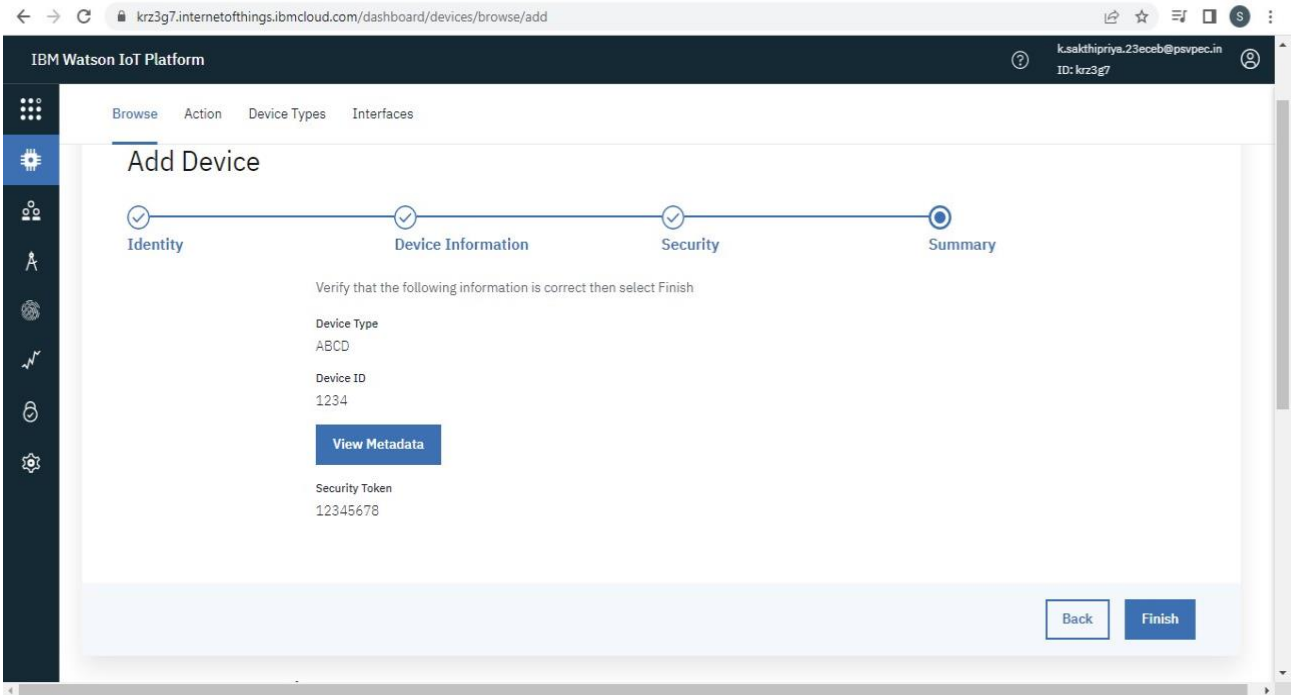
Service name: Internet of Things Platform-ar

Resource group: Default

Existing Lite plan instance
You can have only 1 Lite plan instance of this service per resource group. Delete your current Lite plan instance in Default resource group to create a new one, or view the existing instance
.

□ I have read and agree to the following license agreements:
Terms

Device credentials information:



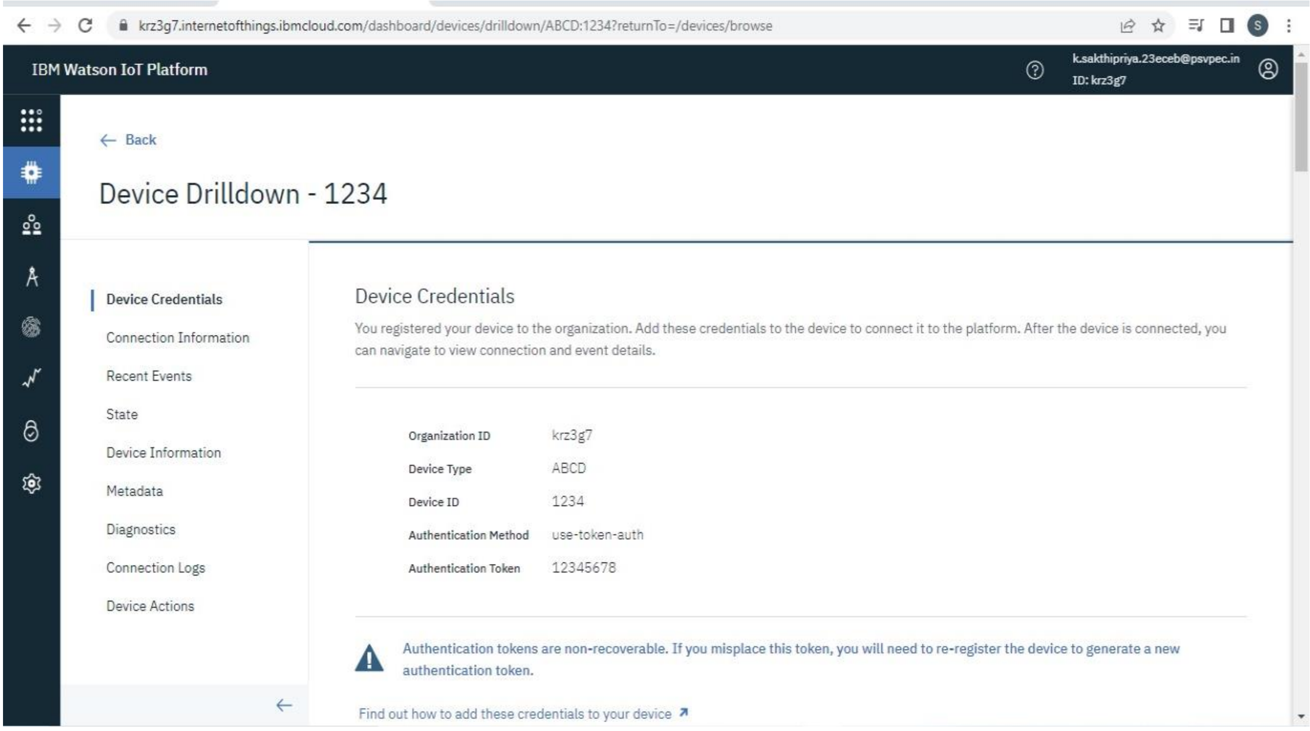
Add Device

Verify that the following information is correct then select Finish

Device Type
ABCD

Device ID
1234

Security Token
12345678



Device Drilldown - 1234

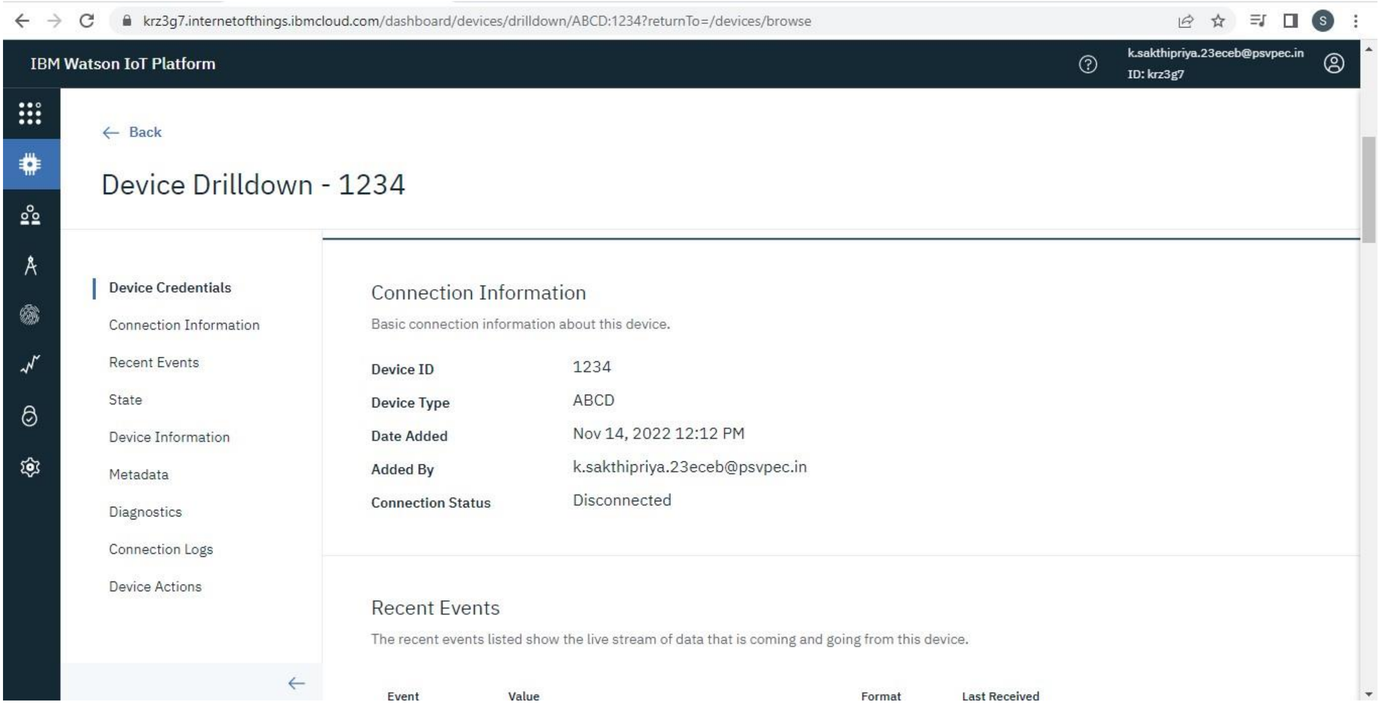
Device Credentials

You registered your device to the organization. Add these credentials to the device to connect it to the platform. After the device is connected, you can navigate to view connection and event details.

Organization ID	krz3g7
Device Type	ABCD
Device ID	1234
Authentication Method	use-token-auth
Authentication Token	12345678

Authentication tokens are non-recoverable. If you misplace this token, you will need to re-register the device to generate a new authentication token.

Find out how to add these credentials to your device



Device Drilldown - 1234

Connection Information

Basic connection information about this device.

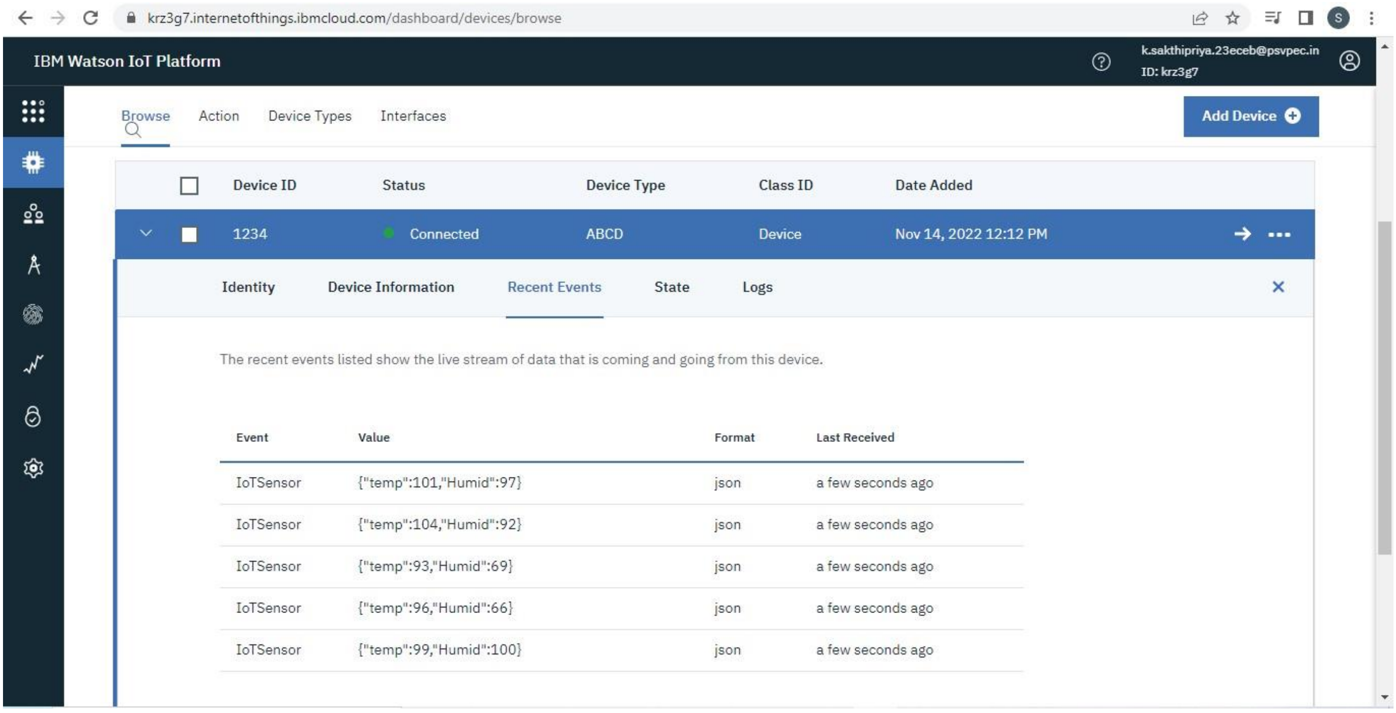
Device ID	1234
Device Type	ABCD
Date Added	Nov 14, 2022 12:12 PM
Added By	k.sakthipriya.23eceb@psvpec.in
Connection Status	Disconnected

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

IBM Watson Output:



□	Device ID	Status	Device Type	Class ID	Date Added
□	1234	● Connected	ABCD	Device	Nov 14, 2022 12:12 PM

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

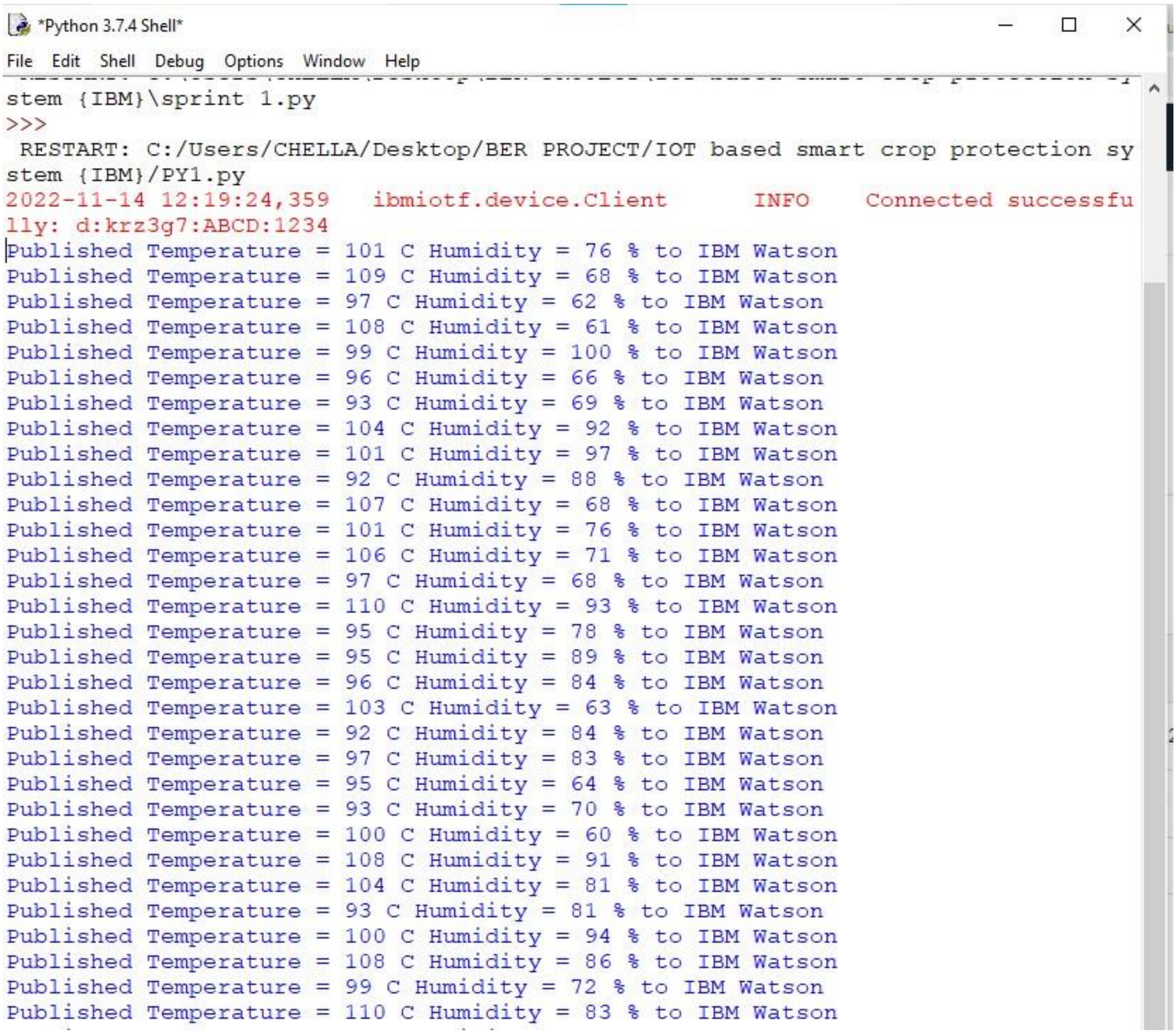
Event	Value	Format	Last Received
IoTSensor	{"temp":101,"Humid":97}	json	a few seconds ago
IoTSensor	{"temp":104,"Humid":92}	json	a few seconds ago
IoTSensor	{"temp":93,"Humid":69}	json	a few seconds ago
IoTSensor	{"temp":96,"Humid":66}	json	a few seconds ago
IoTSensor	{"temp":99,"Humid":100}	json	a few seconds ago

Python Code:

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

#IBM Watson Device Credentials.
organization = "krz3g7"
deviceType = "ABCD"
deviceId = "1234"
authMethod = "token"
authToken = "12345678"
def myCommandCallback(cmd):
 print("Command received: %s" % cmd.data['command'])
 status=cmd.data['command']
 if status=="sprinkler_on":
    print ("sprinkler is ON")
 else :
    print ("sprinkler is OFF")
 #print(cmd)



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()
#Connecting to IBM watson.
deviceCli.connect()
while True:
#Getting values from sensors.
 temp_sensor = round( random.uniform(0,80),2)
 PH_sensor = round(random.uniform(1,14),3)
 camera = ["Detected","Not Detected","Not Detected","Not Detected","Not Detected","Not Detected",]
 camera_reading = random.choice(camera)
 flame = ["Detected","Not Detected","Not Detected","Not Detected","Not Detected","Not Detected",]
 flame_reading = random.choice(flame)
 moist_level = round(random.uniform(0,100),2)
 water_level = round(random.uniform(0,30),2)

#storing the sensor data to send in json format to cloud.

 temp_data = { 'Temperature' : temp_sensor }
 PH_data = { 'PH Level' : PH_sensor }
 camera_data = { 'Animal attack' : camera_reading}
 flame_data = { 'Flame' : flame_reading }
 moist_data = { 'Moisture Level' : moist_level}
 water_data = { 'Water Level' : water_level}

# publishing Sensor data to IBM Watson for every 5-10 seconds.
 success = deviceCli.publishEvent("Temperature sensor", "json", temp_data, qos=0)
 sleep(1)
 if success:
    print (" ............................publish ok............................. ")
 print ("Published Temperature = %s C" % temp_sensor, "to IBM Watson")

 success = deviceCli.publishEvent("PH sensor", "json", PH_data, qos=0)
 sleep(1)
 if success:
    print ("Published PH Level = %s" % PH_sensor, "to IBM Watson")

 success = deviceCli.publishEvent("camera", "json", camera_data, qos=0)
 sleep(1)
 if success:
    print ("Published Animal attack %s " % camera_reading, "to IBM Watson")
 success = deviceCli.publishEvent("Flame sensor", "json", flame_data, qos=0)
 sleep(1)
 if success:
    print ("Published Flame %s " % flame_reading, "to IBM Watson")

 success = deviceCli.publishEvent("Moisture sensor", "json", moist_data, qos=0)
 sleep(1)
 if success:
     print ("Published Moisture Level = %s " % moist_level, "to IBM Watson")

 success = deviceCli.publishEvent("Water sensor", "json", water_data, qos=0)
 sleep(1)
 if success:
    print ("Published Water Level = %s cm" % water_level, "to IBM Watson")
 print ("")
 #Automation to control sprinklers by present temperature an to send alert message to IBM Watson.

 if (temp_sensor > 35):
    print("sprinkler-1 is ON")
 success = deviceCli.publishEvent("Alert1", "json",{ 'alert1' : "Temperature(%s) is high, sprinkerlers are
turned ON" %temp_sensor }
, qos=0)
 sleep(1)
 if success:
    print( 'Published alert1 : ', "Temperature(%s) is high, sprinkerlers are turned ON" %temp_sensor,"to
IBM Watson")
```

```
 print("")
else:
 print("sprinkler-1 is OFF")
 print("")

 #To send alert message if farmer uses the unsafe fertilizer to crops.

 if (PH_sensor > 7.5 or PH_sensor < 5.5):
    success = deviceCli.publishEvent("Alert2", "json",{ 'alert2' : "Fertilizer PH level(%s) is not safe,use
other fertilizer" %PH_sensor } ,
qos=0)
 sleep(1)
 if success:
    print('Published alert2 : ' , "Fertilizer PH level(%s) is not safe,use other fertilizer" %PH_sensor,"to IBM
Watson")
 print("")

 #To send alert message to farmer that animal attack on crops.

 if (camera_reading == "Detected"):
    success = deviceCli.publishEvent("Alert3", "json", { 'alert3' : "Animal attack on crops detected" },
qos=0)
 sleep(1)
 if success:
    print('Published alert3 : ' , "Animal attack on crops detected","to IBM Watson","to IBM Watson")
 print("")
 #To send alert message if flame detected on crop land and turn ON the splinkers to take immediate action.

 if (flame_reading == "Detected"):
    print("sprinkler-2 is ON")
 success = deviceCli.publishEvent("Alert4", "json", { 'alert4' : "Flame is detected crops are in
danger,sprinklers turned ON" }, qos=0)
 sleep(1)
 if success:
    print( 'Published alert4 : ' , "Flame is detected crops are in danger,sprinklers turned ON","to IBM
Watson")

 #To send alert message if Moisture level is LOW and to Turn ON Motor-1 for irrigation.
 if (moist_level < 20):
    print("Motor-1 is ON")
 success = deviceCli.publishEvent("Alert5", "json", { 'alert5' : "Moisture level(%s) is low, Irrigation
started" %moist_level }, qos=0)
 sleep(1)
 if success:
    print('Published alert5 : ' , "Moisture level(%s) is low, Irrigation started" %moist_level,"to IBM Watson"
)
 print("")
 #To send alert message if Water level is HIGH and to Turn ON Motor-2 to take water out.
 if (water_level > 20):
    print("Motor-2 is ON")
 success = deviceCli.publishEvent("Alert6", "json", { 'alert6' : "Water level(%s) is high, so motor is ON to
take water out "
%water_level }, qos=0)
 sleep(1)
 if success:
    print('Published alert6 : ' , "water level(%s) is high, so motor is ON to take water out " %water_level,"to
IBM Watson" )
    print("")
 #command recived by farmer
deviceCli.commandCallback = myCommandCallback
# Disconnect the device and application from the cloud
deviceCli.disconnect()
```

Python Output:



```
stem {IBM}\sprint 1.py
>>>
 RESTART: C:/Users/CHELLA/Desktop/BER PROJECT/IOT based smart crop protection sy
stem {IBM}/PY1.py
2022-11-14 12:19:24,359   ibmiotf.device.Client      INFO    Connected successfu
lly: d:krz3g7:ABCD:1234
Published Temperature = 101 C Humidity = 76 % to IBM Watson
Published Temperature = 109 C Humidity = 68 % to IBM Watson
Published Temperature = 97 C Humidity = 62 % to IBM Watson
Published Temperature = 108 C Humidity = 61 % to IBM Watson
Published Temperature = 99 C Humidity = 100 % to IBM Watson
Published Temperature = 96 C Humidity = 66 % to IBM Watson
Published Temperature = 93 C Humidity = 69 % to IBM Watson
Published Temperature = 104 C Humidity = 92 % to IBM Watson
Published Temperature = 101 C Humidity = 97 % to IBM Watson
Published Temperature = 92 C Humidity = 88 % to IBM Watson
Published Temperature = 107 C Humidity = 68 % to IBM Watson
Published Temperature = 101 C Humidity = 76 % to IBM Watson
Published Temperature = 106 C Humidity = 71 % to IBM Watson
Published Temperature = 97 C Humidity = 68 % to IBM Watson
Published Temperature = 110 C Humidity = 93 % to IBM Watson
Published Temperature = 95 C Humidity = 78 % to IBM Watson
Published Temperature = 95 C Humidity = 89 % to IBM Watson
Published Temperature = 96 C Humidity = 84 % to IBM Watson
Published Temperature = 103 C Humidity = 63 % to IBM Watson
Published Temperature = 92 C Humidity = 84 % to IBM Watson
Published Temperature = 97 C Humidity = 83 % to IBM Watson
Published Temperature = 95 C Humidity = 64 % to IBM Watson
Published Temperature = 93 C Humidity = 70 % to IBM Watson
Published Temperature = 100 C Humidity = 60 % to IBM Watson
Published Temperature = 108 C Humidity = 91 % to IBM Watson
Published Temperature = 104 C Humidity = 81 % to IBM Watson
Published Temperature = 93 C Humidity = 81 % to IBM Watson
Published Temperature = 100 C Humidity = 94 % to IBM Watson
Published Temperature = 108 C Humidity = 86 % to IBM Watson
Published Temperature = 99 C Humidity = 72 % to IBM Watson
Published Temperature = 110 C Humidity = 83 % to IBM Watson
```