Sprint-1

Team ID	PNT2022TMID44430
Project Name	IOT BASED SMART CROP PROTECTION SYSTEM FOR AGRICULTURE .

Program:

```
import random
import ibmiotf.application
import ibmiotf.device
from time import sleep
import sys
#IBM Watson Device Credentials.
organization = "op865k"
deviceType = "NodeMCU"
deviceId = "12345"
authMethod = "token"
authToken = "1223334444"
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:
```

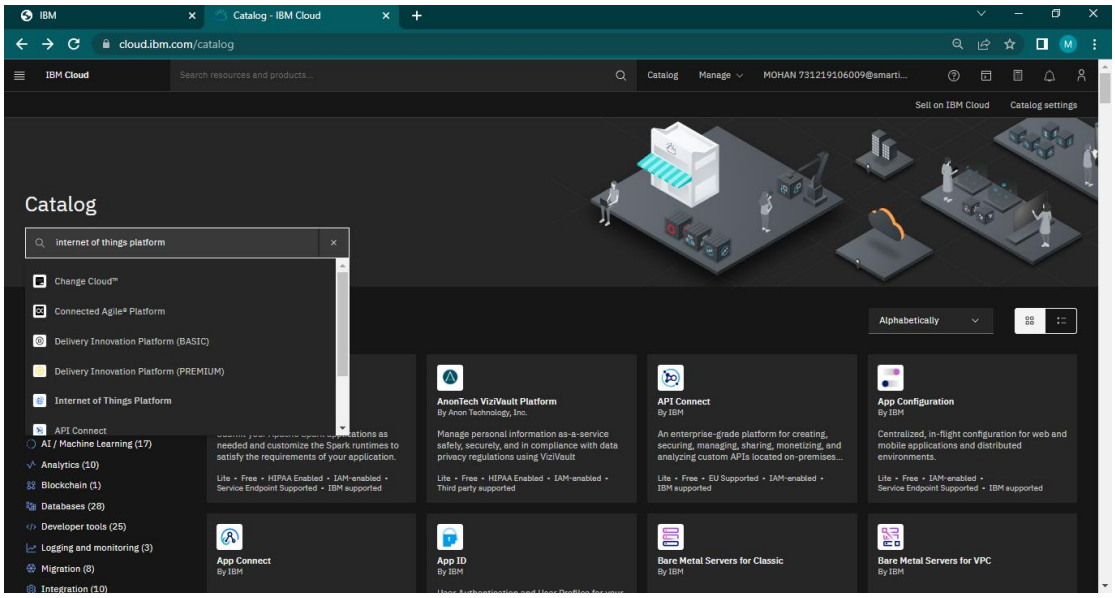
```
        print ("Published PH Level = %s" % PH_sensor, "to IBM
Watson")

  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)
```

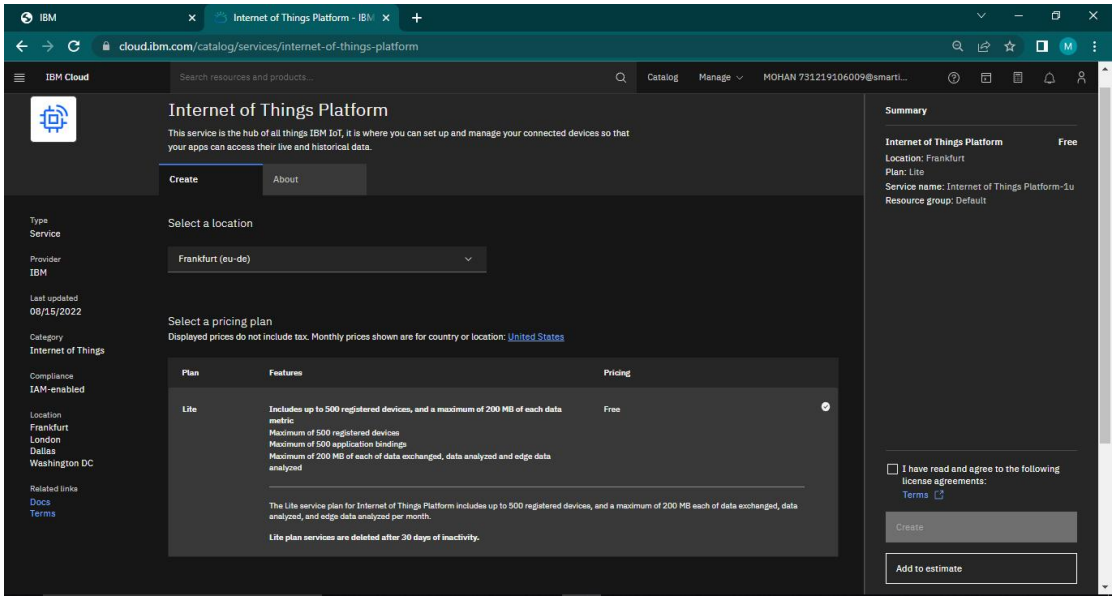
```
  sleep(1)
  if success:
       print ("Published Water Level = %s cm" % water_level, "to
IBM Watson")
  print ("")
  #Automation to control sprinklers by present temperature an to
send alert message to IBM Watson.

  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()
```

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Last updated
08/15/2022
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London
Dallas
Washington DC
Related links
Docs
Terms
Select a location
Frankfurt (eu-de)
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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
Maximum of 200 MB of each of data exchanged, data analyzed and edge data analyzed
Free
The Lite service plan for Internet of Things Platform includes up to 500 registered devices, and a maximum of 200 MB each of data exchanged, data analyzed, and edge data analyzed per month.
Lite plan services are deleted after 30 days of inactivity.
Summary
Internet of Things Platform
Free
Location: Frankfurt
Plan: Lite
Service name: Internet of Things Platform-1u
Resource group: Default
I have read and agree to the following license agreements:
Terms
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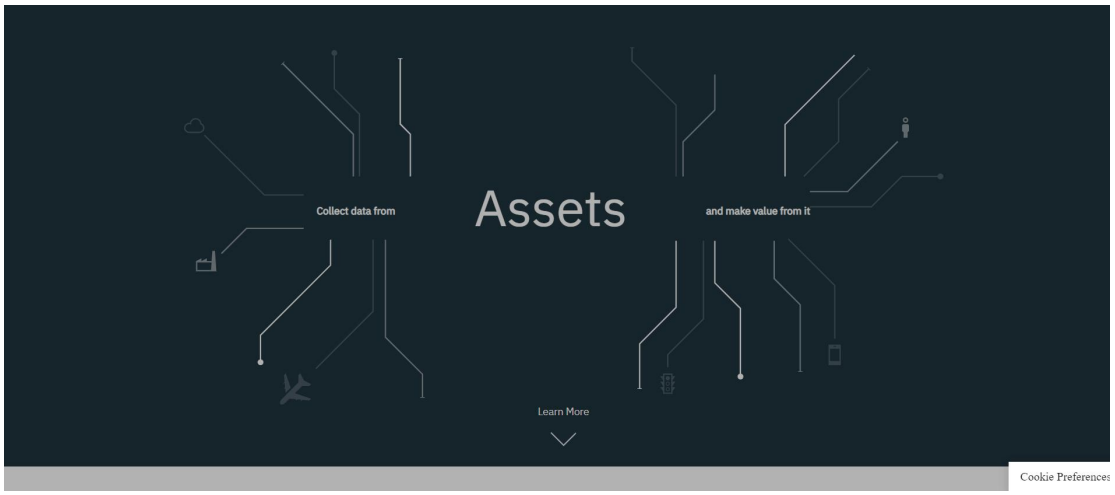
Add to estimate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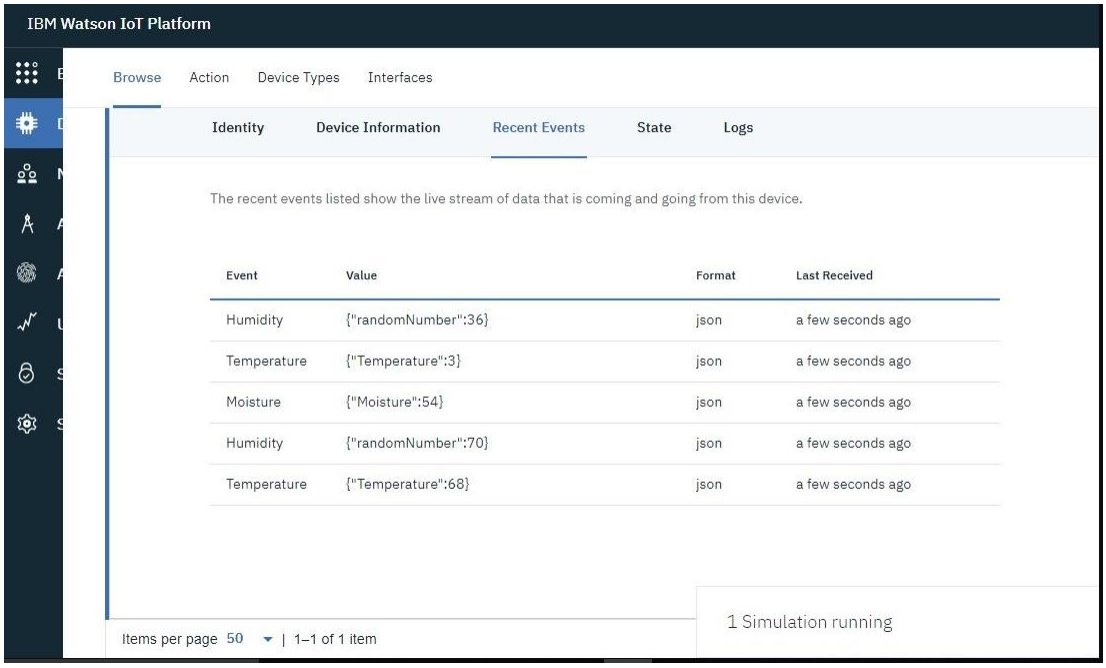
IBM Watson IoT Platform
Browse
Action
Device Types
Interfaces
Identity
Device Information
Recent Events
State
Logs
The recent events listed show the live stream of data that is coming and going from this device.
Event
Value
Format
Last Received
Humidity
{"randomNumber":36}
json
a few seconds ago
Temperature
{"Temperature":3}
json
a few seconds ago
Moisture
{"Moisture":54}
json
a few seconds ago
Humidity
{"randomNumber":70}
json
a few seconds ago
Temperature
{"Temperature":68}
json
a few seconds ago
Items per page 50
1–1 of 1 item
1 Simulation running