

TEAM ID	PNT2022TMID23634
TEAM MEMBER	T.Deepika S.Dhanalakshmi K.S.Dhivya P.Malathi

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import random

import ibmiotf.application

import ibmiotf.device

from time import sleep

import sys

#IBM Watson Device Credentials.

organization = "VCEW"

deviceType = "Deepika"

deviceId = "Deepika89"

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:

```

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    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")

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```
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.
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```
if (temp_sensor > 35):
```

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    print("sprinkler-1 is ON")
```

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success = deviceCli.publishEvent("Alert1", "json", { 'alert1' : "Temperature(%s) is high, sprinklers  
are turned ON" %temp_sensor }
```

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, qos=0)

sleep(1)

if success:

    print( 'Published alert1 : ', "Temperature(%) is high, sprinklerlers 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(%) is not safe,use
other fertilizer" %PH_sensor } ,

qos=0)

sleep(1)

if success:

    print('Published alert2 : ', "Fertilizer PH level(%) 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")

d to Turn ON Motor-1 for irrigation.

if (moist_level < 20):
    print("Motor-1 is ON")

    success = deviceCli.publishEvent("Alert5", "json", { 'alert5' : "Moisture level(%) is low, Irrigation
started" %moist_level }, qos=0)

    sleep(1)

    if success:
        print('Published alert5 : ' , "Moisture level(%) 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(%) is high, so motor is ON
to take water out "
%water_level }, qos=0)

    sleep(1)

    if success:
        print('Published alert6 : ' , "water level(%) 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

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deviceCli.disconnect()
```