

## Develop the PYTHON SCRIPT

```
#modules import
import time
import sys
import ibmiotf.application
import ibmiotf.device
import random
from datetime import datetime

#Provide your IBM Watson Device Credentials
organization = "2ayt7j"
deviceType = "IoT"
deviceId = "95509404"
authMethod = "token"
authToken = "77087672"

#cheran exp 12673
def Cheran_express():
    if T in range(1290,1320):
        result="CURRENT RUNNING STATUS : About to Start from
MGR Chennai Central " ;
    elif T==1320:
        result="CURRENT RUNNING STATUS : Started from MGR
Chennai Central";
```

```
elif T in range(1321,1380):  
    result="CURRENT RUNNING STATUS : About to Reach  
Arakkonam Junction";  
elif T==1380:  
    result="CURRENT RUNNING STATUS : Train reached  
Arakkonam Junction";  
elif T in range(1381,1439) or T in range(0,65):  
    result="CURRENT RUNNING STATUS : Train crossed  
Arakkonam Junction and about to reach Jolarpettai Junction";  
elif T==65:  
    result="CURRENT RUNNING STATUS : Train reached  
Jolarpettai Junction";  
elif T in range(66,170):  
    result="CURRENT RUNNING STATUS : Train crossed  
Jolarpettai Junction and about to reach Salem Junction";  
elif T==170:  
    result="CURRENT RUNNING STATUS : Train reached Salem  
Junction";  
elif T in range(171,230):  
    result="CURRENT RUNNING STATUS : Train crossed Salem  
Junction and about to reach Erode Junction";  
elif T==230:  
    result="CURRENT RUNNING STATUS : Train reached Erode  
Junction ";  
elif T in range(231,275):
```

```
    result="CURRENT RUNNING STATUS : Train crossed Erode  
Junction and about to reach Tiruppur ";
```

```
    elif T==275:
```

```
        result="CURRENT RUNNING STATUS : Train reached Tiruppur  
Junction ";
```

```
    elif T in range(276,330):
```

```
        result="CURRENT RUNNING STATUS : Train crossed Tiruppur  
Junction and about to reach Coimbatore North";
```

```
    elif T==330:
```

```
        result="CURRENT RUNNING STATUS : Train reached  
Coimbatore North ";
```

```
    elif T in range(331,360):
```

```
        result="CURRENT RUNNING STATUS : Train crossed  
Coimbatore North and about to reach Coimbatore Junction";
```

```
    elif T==360:
```

```
        result="CURRENT RUNNING STATUS : Train reached  
Coimbatore Junction";
```

```
    else :
```

```
        result="CURRENT RUNNING STATUS : Train reached  
Coimbatore Junction at 06:00 and Yet to start from MGR Chennai  
Central at 22:00 ";
```

```
    return result
```

```
#Nilagiri express 12671
```

```
def Nilagiri_express():
```

```
if T in range(1235,1265):  
    result="CURRENT RUNNING STATUS : About to Start from  
MGR Chennai Central by 21:05 " ;  
    elif T==1265:  
        result="CURRENT RUNNING STATUS : Starts from MGR  
Chennai Central";  
    elif T in range(1266,1325):  
        result="CURRENT RUNNING STATUS : Started from MGR  
Chennai Central and About to Reach Arakkonam Junction";  
    elif T==1325:  
        result="CURRENT RUNNING STATUS : Train reached  
Arakkonam Junction";  
    elif T in range(1326,1375):  
        result="CURRENT RUNNING STATUS : Train crossed  
Arakkonam Junction and about to reach Katpadi Junction";  
    elif T==1375:  
        result="CURRENT RUNNING STATUS : Train reached Katpadi  
Junction";  
    elif T in range(1376,1440) or T in range(0,110) :  
        result="CURRENT RUNNING STATUS : Train crossed Katpadi  
Junction and about to reach Salem Junction";  
    elif T==110:  
        result="CURRENT RUNNING STATUS : Train reached Salem  
Junction";  
    elif T in range(111,180):
```

result="CURRENT RUNNING STATUS : Train crossed Salem Junction and about to reach Erode Junction";

elif T==180:

result="CURRENT RUNNING STATUS : Train reached Erode Junction ";

elif T in range(181,225):

result="CURRENT RUNNING STATUS : Train crossed Erode Junction and about to reach Tiruppur ";

elif T==225:

result="CURRENT RUNNING STATUS : Train reached Tiruppur Junction ";

elif T in range(226,270):

result="CURRENT RUNNING STATUS : Train crossed Tiruppur Junction and about to reach Coimbatore North";

elif T==270:

result="CURRENT RUNNING STATUS : Train reached Coimbatore North ";

elif T in range(271,320):

result="CURRENT RUNNING STATUS : Train crossed Coimbatore North and about to reach Coimbatore Junction";

elif T==320:

result="CURRENT RUNNING STATUS : Train reached Coimbatore Junction";

elif T in range(321,375):

result="CURRENT RUNNING STATUS : Train crossed Coimbatore Junction and about to reach Mettupalayam ";

```

elif T==375:
    result="CURRENT RUNNING STATUS : Train reached
Mettupalayam";
    elif T in range(376,406):
        result="CURRENT RUNNING STATUS : Train reached
Mettupalayam at 06:15";
    else :
        result="CURRENT RUNNING STATUS : Train reached
Mettupalayam at 06:15 and Yet to start from MGR Chennai Central at
21:05 ";
    return result
#Kovai express1 12675
def Kovai_express():
    if T in range(340,370):
        result="CURRENT RUNNING STATUS : About to Start from
MGR Chennai Central by 06:10 " ;
    elif T==370:
        result="CURRENT RUNNING STATUS : Starts from MGR
Chennai Central";
    elif T in range(371,430):
        result="CURRENT RUNNING STATUS : Started from MGR
Chennai Central and About to Reach Arakkonam Junction";
    elif T==430:
        result="CURRENT RUNNING STATUS : Train reached
Arakkonam Junction";

```

elif T in range(431,460):

result="CURRENT RUNNING STATUS : Train crossed  
Arakkonam Junction and about to reach Walaja Road Junction";

elif T==460:

result="CURRENT RUNNING STATUS : Train reached Walaja  
Road Junction";

elif T in range(461,485):

result="CURRENT RUNNING STATUS : Train crossed Walaja  
Road Junction and about to reach Katpadi Junction";

elif T==485:

result="CURRENT RUNNING STATUS : Train reached Katpadi  
Junction";

elif T in range(486,525):

result="CURRENT RUNNING STATUS : Train crossed Katpadi  
Junction and about to reach Ambur";

elif T==525:

result="CURRENT RUNNING STATUS : Train reached Ambur ";

elif T in range(526,560):

result="CURRENT RUNNING STATUS : Train crossed Ambur  
and about to reach Jolarpettai Junction ";

elif T==560:

result="CURRENT RUNNING STATUS : Train reached  
Jolarpettai Junction ";

elif T in range(561,610):

result="CURRENT RUNNING STATUS : Train crossed  
Jolarpettai Junction and about to reach Morappur";

elif T==610:

result="CURRENT RUNNING STATUS : Train reached  
Morappur ";

elif T in range(611,670):

result="CURRENT RUNNING STATUS : Train crossed  
Morappur and about to reach Salem Junction";

elif T==670:

result="CURRENT RUNNING STATUS : Train reached Salem  
Junction";

elif T in range(671,730):

result="CURRENT RUNNING STATUS : Train crossed Salem  
Junction and about to reach Erode Junction ";

elif T==730:

result="CURRENT RUNNING STATUS : Train reached Erode  
Junction";

elif T in range(731,775):

result="CURRENT RUNNING STATUS :Train crossed Erode  
Junction and about to reach Tiruppur";

elif T==775:

result="CURRENT RUNNING STATUS : Train reached  
Tiruppur";

elif T in range(776,845):

result="CURRENT RUNNING STATUS :Train crossed Tiruppur  
and about to reach Coimbatore Juntion";



```

elif T==845:
    result="CURRENT RUNNING STATUS : Train reached
Coimbatore Junction";
    elif T in range(846,876):
        result="CURRENT RUNNING STATUS : Train reached
Coimbatore Junction at 14:05";
    else :
        result="CURRENT RUNNING STATUS : Train Coimbatore
Junction at 14:05 and Yet to start from MGR Chennai Central at 06:10 ";
    return result

#Nagercoil Jn sf express 12689
def Nagercoil_JN_SF_Express():
    if T in range(1110,1140):
        result="CURRENT RUNNING STATUS : About to Start from
MGR Chennai Central by 19:00 " ;
        elif T==1140:
            result="CURRENT RUNNING STATUS : Starts from MGR
Chennai Central";
            elif T in range(1141,1200):
                result="CURRENT RUNNING STATUS : Started from MGR
Chennai Central and About to Reach Arakkonam Junction";
            elif T==1200:
                result="CURRENT RUNNING STATUS : Train reached
Arakkonam Junction";

```

```
elif T in range(1200,1250):  
    result="CURRENT RUNNING STATUS : Train crossed  
Arakkonam Junction and about to reach Katpadi Junction";  
    elif T==1250:  
        result="CURRENT RUNNING STATUS : Train reached Katpadi  
Junction";  
    elif T in range(1251,1330):  
        result="CURRENT RUNNING STATUS : Train crossed Katpadi  
Junction and about to reach Jolarpettai Junction";  
    elif T==1330:  
        result="CURRENT RUNNING STATUS : Train reached  
Jolarpettai Junction";  
    elif T in range(1331,1340):  
        result="CURRENT RUNNING STATUS : Train crossed  
Jolarpettai Junction and about to reach Tirupattur";  
    elif T==1340:  
        result="CURRENT RUNNING STATUS : Train reached  
Tirupattur ";  
    elif T in range(1341,1375):  
        result="CURRENT RUNNING STATUS : Train crossed Tirupattur  
and about to reach Morappur";  
    elif T==1375:  
        result="CURRENT RUNNING STATUS : Train reached  
Morappur ";  
    elif T in range(1376,1435):
```

result="CURRENT RUNNING STATUS : Train crossed Morappur and about to reach Salem Junction";

elif T==1435:

result="CURRENT RUNNING STATUS : Train reached Salem Junction";

elif T in range(1436,1440) or T in range(0,50):

result="CURRENT RUNNING STATUS : Train crossed Salem Junction and about to reach Namakkal";

elif T==50:

result="CURRENT RUNNING STATUS : Train reached Namakkal";

elif T in range(51,95):

result="CURRENT RUNNING STATUS : Train crossed Namakkal and about to reach Karur Junction ";

elif T==95:

result="CURRENT RUNNING STATUS : Train reached Karur Junction";

elif T in range(96,190):

result="CURRENT RUNNING STATUS :Train crossed Karur Junction and about to reach Tiruchchirappalli Junction";

elif T==190:

result="CURRENT RUNNING STATUS : Train reached Tiruchchirappalli Junction";

elif T in range(191,255):

result="CURRENT RUNNING STATUS :Train crossed Tiruchchirappalli Junction and about to reach Dindigul Junction";

elif T==255:

result="CURRENT RUNNING STATUS : Train reached Dindigul Junction";

elif T in range(256,275):

result="CURRENT RUNNING STATUS : Train crossed Dindigul Junction and about to reach Kodaikanal Road";

elif T==275:

result="CURRENT RUNNING STATUS : Train reached Kodaikanal Road";

elif T in range(276,340):

result="CURRENT RUNNING STATUS : Train crossed Kodaikanal Road and about to reach Madurai Junction";

elif T==340:

result="CURRENT RUNNING STATUS : Train reached Madurai Junction";

elif T in range(341,375):

result="CURRENT RUNNING STATUS : Train crossed Madurai Junction and about to reach Virudunagar Junction";

elif T==375:

result="CURRENT RUNNING STATUS : Train reached Virudunagar Junction";

elif T in range(376,400):

result="CURRENT RUNNING STATUS : Train crossed Virudunagar Junction and about to reach Satur";

elif T==400:

```
    result="CURRENT RUNNING STATUS : Train reached Satur";  
    elif T in range(401,425):  
        result="CURRENT RUNNING STATUS : Train crossed Satur and  
about to reach Kovilpatti";  
    elif T==425:  
        result="CURRENT RUNNING STATUS : Train reached  
Kovilpatti";  
    elif T in range(426,540):  
        result="CURRENT RUNNING STATUS : Train crossed Kovilpatti  
and about to reach Tirunelveli Junction";  
    elif T==540:  
        result="CURRENT RUNNING STATUS : Train reached  
Tirunelveli Junction";  
    elif T in range(541,650):  
        result="CURRENT RUNNING STATUS : Train crossed  
Tirunelveli Junction and about to reach Nagercoil Junction";  
    elif T==650:  
        result="CURRENT RUNNING STATUS : Train reached Nagercoil  
Junction ";  
    elif T in range(651,681):  
        result="CURRENT RUNNING STATUS : Train reached Nagercoil  
Junction at 10:50";  
    else :  
        result="CURRENT RUNNING STATUS : Train reached Nagercoil  
Junction at 10:50 and Yet to start from MGR Chennai Central at 19:00 ";
```

```
return result
```

```
#Madurai SF Express 20601
```

```
def Madurai_SF_Express():
```

```
    if T in range(1320,1350):
```

```
        result="CURRENT RUNNING STATUS : About to Start from  
MGR Chennai Central by 22:30 " ;
```

```
    elif T==1350:
```

```
        result="CURRENT RUNNING STATUS : Starts from MGR  
Chennai Central";
```

```
    elif T in range(1350,1400) or T in range(0,15):
```

```
        result="CURRENT RUNNING STATUS : Started from MGR  
Chennai Central and About to Reach Katpadi Junction";
```

```
    elif T==15:
```

```
        result="CURRENT RUNNING STATUS : Train reached Katpadi  
Junction";
```

```
    elif T in range(16,185):
```

```
        result="CURRENT RUNNING STATUS : Train crossed Katpadi  
Junction and about to reach Salem Junction";
```

```
    elif T==185:
```

```
        result="CURRENT RUNNING STATUS : Train reached Salem  
Junction";
```

```
    elif T in range(186,280):
```

result="CURRENT RUNNING STATUS : Train crossed Salem Junction and about to reach Karur Junction";

elif T==280:

result="CURRENT RUNNING STATUS : Train reached Karur Junction";

elif T in range(281,360):

result="CURRENT RUNNING STATUS : Train crossed Karur Junction and about to reach Dindigul Junction";

elif T==360:

result="CURRENT RUNNING STATUS : Train reached Dindigul Junction";

elif T in range(361,440):

result="CURRENT RUNNING STATUS : Train crossed Dindigul Junction and about to reach Madurai Junction";

elif T==440:

result="CURRENT RUNNING STATUS : Train reached Madurai Junction";

elif T in range(441,471):

result="CURRENT RUNNING STATUS : Train reached Madurai Junction at 07:20";

else :

result="CURRENT RUNNING STATUS : Train reached Madurai Junction at 07:20 and Yet to start from MGR Chennai Central at 22:30 ";

return result

#MYSURU VANDE BHARAT EXPRESS 20607

def MYSURU\_Vande\_Bharat\_Express():

    if T in range(320,350):

        result="CURRENT RUNNING STATUS : About to Start from  
MGR Chennai Central by 05:50 " ;

    elif T==350:

        result="CURRENT RUNNING STATUS : Starts from MGR  
Chennai Central";

    elif T in range(351,445):

        result="CURRENT RUNNING STATUS : Started from MGR  
Chennai Central and About to Reach Katpadi Junction";

    elif T==445:

        result="CURRENT RUNNING STATUS : Train reached Katpadi  
Junction";

    elif T in range(446,625):

        result="CURRENT RUNNING STATUS : Train crossed Katpadi  
Junction and about to reach KSR Bengaluru City Junction";

    elif T==625:

        result="CURRENT RUNNING STATUS : Train reached KSR  
Bengaluru City Junction";

    elif T in range(626,740):

        result="CURRENT RUNNING STATUS : Train crossed KSR  
Bengaluru City Junction and about to reach Mysuru Junction";

    elif T==740:



```
    result="CURRENT RUNNING STATUS : Train reached Mysuru Junction";
```

```
    elif T in range(741,771):
```

```
        result="CURRENT RUNNING STATUS : Train reached Mysuru Junction at 12:20";
```

```
    else :
```

```
        result="CURRENT RUNNING STATUS : Train reached Mysuru Junction at 12:20 and Yet to start from MGR Chennai Central at 05:50 ";
```

```
    return result
```

```
#Mysuru shatabdi express 12007
```

```
def MYSURU_Shatabdi_Express():
```

```
    if T in range(330,360):
```

```
        result="CURRENT RUNNING STATUS : About to Start from MGR Chennai Central by 06:00" ;
```

```
    elif T==360:
```

```
        result="CURRENT RUNNING STATUS : Starts from MGR Chennai Central";
```

```
    elif T in range(361,460):
```

```
        result="CURRENT RUNNING STATUS : Started from MGR Chennai Central and About to Reach Katpadi Junction";
```

```
    elif T==460:
```

```
        result="CURRENT RUNNING STATUS : Train reached Katpadi Junction";
```

```
    elif T in range(466,650):
```

```
    result="CURRENT RUNNING STATUS : Train crossed Katpadi Junction and about to reach KSR Bengaluru City Junction";
```

```
elif T==650:
```

```
    result="CURRENT RUNNING STATUS : Train reached KSR Bengaluru City Junction";
```

```
elif T in range(651,780):
```

```
    result="CURRENT RUNNING STATUS : Train crossed KSR Bengaluru City Junction and about to reach Mysuru Junction";
```

```
elif T==780:
```

```
    result="CURRENT RUNNING STATUS : Train reached Mysuru Junction";
```

```
elif T in range(781,811):
```

```
    result="CURRENT RUNNING STATUS : Train reached Mysuru Junction at 01:00";
```

```
else :
```

```
    result="CURRENT RUNNING STATUS : Train reached Mysuru Junction at 01:00 and Yet to start from MGR Chennai Central at 06:00 ";
```

```
    return result
```

```
# Initialize GPIO
```

```
# TO get information from cloud to python code
```

```
def myCommandCallback(cmd):
```

```

print("Train no.: %s" % cmd.data['command'])
status=cmd.data['command']
if status=="12673":
    tr_name='CHERAN EXPRESS'
    result = Cheran_express()
    data = {'TRAIN_NO': status,'TRAIN_NAME':
tr_name,'LOCATION' : result}

def myOnPublishCallback():
    print ("Published location = %s " % result,"to IBM Watson")
    success = deviceCli.publishEvent("IoTSensor", "json", data, qos=0,
on_publish=myOnPublishCallback)

if not success:
    print("Not connected to IoTF")
elif status=="12671":
    tr_name='NILAGIRI EXPRESS'
    result = Nilagiri_express()
    data = {'TRAIN_NO': status,'TRAIN_NAME':
tr_name,'LOCATION' : result}

def myOnPublishCallback():
    print ("Published location = %s " % result,"to IBM Watson")

```

```
    success = deviceCli.publishEvent("IoTSensor", "json", data, qos=0,  
on_publish=myOnPublishCallback)
```

```
    if not success:
```

```
        print("Not connected to IoTF")
```

```
elif status=="12675":
```

```
    tr_name='KOVAI EXPRESS'
```

```
    result = Kovai_express()
```

```
    data = {'TRAIN_NO': status,'TRAIN_NAME':  
tr_name,'LOCATION' : result}
```

```
def myOnPublishCallback():
```

```
    print ("Published location = %s " % result,"to IBM Watson")
```

```
    success = deviceCli.publishEvent("IoTSensor", "json", data, qos=0,  
on_publish=myOnPublishCallback)
```

```
    if not success:
```

```
        print("Not connected to IoTF")
```

```
elif status=="11679":
```

```
    tr_name='CBE INTERCITY'
```

```
    result = Cbe_intercity()
```

```
    data = {'TRAIN_NO': status,'Train_Name': tr_name,'LOCATION' :  
result}
```

```
def myOnPublishCallback():
```

```
        print ("Published location = %s " % result,"to IBM Watson")
        success = deviceCli.publishEvent("IoTSensor", "json", data, qos=0,
on_publish=myOnPublishCallback)
        if not success:
            print("Not connected to IoTF")
elif status=="12689":
    tr_name='NAGERCOIL JN SF EXPRESS'
    result = Nagercoil_JN_SF_Express()
    data = {'TRAIN_NO': status,'TRAIN_NAME':
tr_name,'LOCATION' : result}
```

```
def myOnPublishCallback():
    print ("Published location = %s " % result,"to IBM Watson")
    success = deviceCli.publishEvent("IoTSensor", "json", data, qos=0,
on_publish=myOnPublishCallback)
```

```
        if not success:
            print("Not connected to IoTF")
elif status=="20601":
    tr_name='MADURAI_SF_EXPRESS'
    result = Madurai_SF_Express()
    data = {'TRAIN_NO': status,'TRAIN_NAME':
tr_name,'LOCATION' : result}
```

```

def myOnPublishCallback():
    print ("Published location = %s " % result,"to IBM Watson")
    success = deviceCli.publishEvent("IoTSensor", "json", data, qos=0,
on_publish=myOnPublishCallback)

    if not success:
        print("Not connected to IoTF")
elif status=="20607":
    tr_name='MYSURU VANDHE BHARAT EXPRESS'
    result = Madurai_SF_Express()
    data = {'TRAIN_NO': status,'TRAIN_NAME':
tr_name,'LOCATION' : result}

```

```

def myOnPublishCallback():
    print ("Published location = %s " % result,"to IBM Watson")
    success = deviceCli.publishEvent("IoTSensor", "json", data, qos=0,
on_publish=myOnPublishCallback)

    if not success:
        print("Not connected to IoTF")
elif status=="12007":
    tr_name='MYSURU SHATABDI EXPRESS'
    result = MYSURU_Shatabdi_Express()

```

```
data = {'TRAIN_NO': status, 'TRAIN_NAME':  
tr_name, 'LOCATION' : result}
```

```
def myOnPublishCallback():  
    print ("Published location = %s " % result, "to IBM Watson")  
    success = deviceCli.publishEvent("IoTSensor", "json", data, qos=0,  
on_publish=myOnPublishCallback)
```

```
if not success:  
    print("Not connected to IoTF")
```

```
else :  
    print ("please send proper command")
```

```
#pinging device
```

```
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()
```

```
#to connect
```

```
deviceCli.connect()
```

```
#this code runs everytime
```

```
while True:
```

```
    cur=datetime.now()
```

```
    H=cur.hour
```

```
    M=cur.minute
```

```
    T=(60*H)+M;
```

```
    deviceCli.commandCallback = myCommandCallback
```

```
    time.sleep(2)
```

```
deviceCli.disconnect()
```