PROJECT DEVELOPMENT PHASE

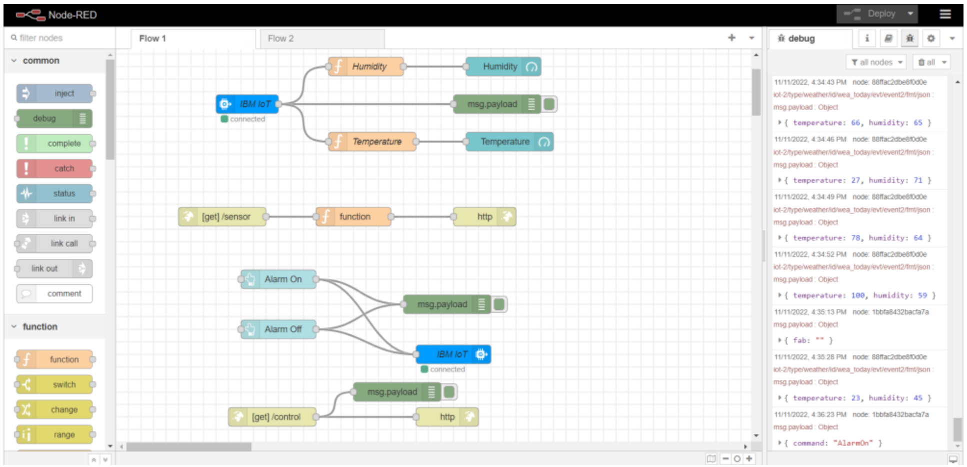
DELIVERY OF SPRINT-3

Date	7 November 2022
Team Id	PNT2022TMID01159
Project Name	Hazardous area monitoring for industrial power plants using IOT.

SPRINT 3: MIT Application Inventor

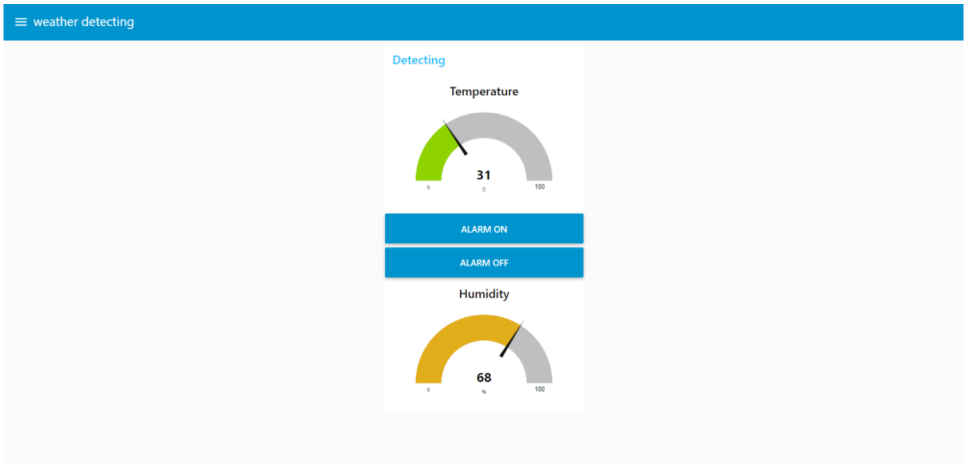
* Building an application for our project using MIT application, designing the model and testing the application.

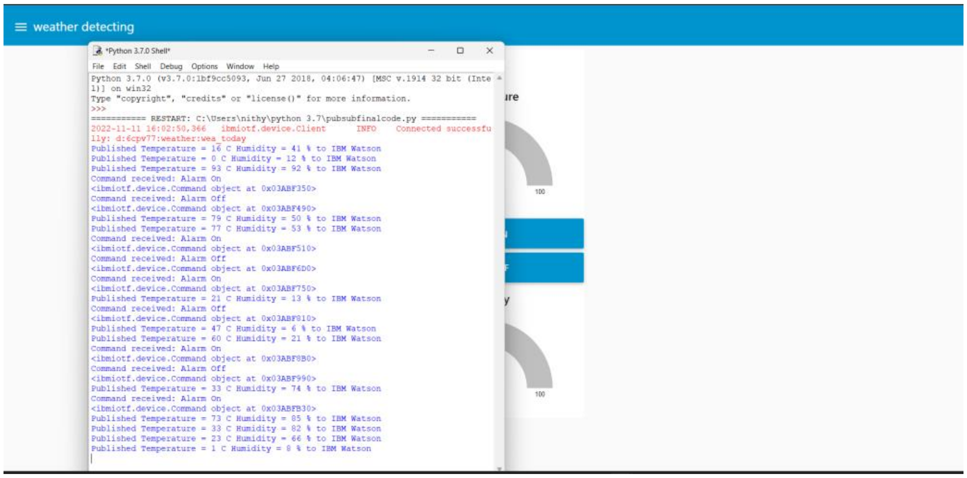
STEP 1: Connecting required nodes in the Node-red platform.



```
11/11/2022, 4:34:43 PM   node: 88ffac2dbe8f0d0e
iot-2/type/weather/id/wea_today/evt/event2/fmt/json :
msg.payload : Object
▸{ temperature: 66, humidity: 65 }
11/11/2022, 4:34:46 PM   node: 88ffac2dbe8f0d0e
iot-2/type/weather/id/wea_today/evt/event2/fmt/json :
msg.payload : Object
▸{ temperature: 27, humidity: 71 }
11/11/2022, 4:34:49 PM   node: 88ffac2dbe8f0d0e
iot-2/type/weather/id/wea_today/evt/event2/fmt/json :
msg.payload : Object
▸{ temperature: 78, humidity: 64 }
11/11/2022, 4:34:52 PM   node: 88ffac2dbe8f0d0e
iot-2/type/weather/id/wea_today/evt/event2/fmt/json :
msg.payload : Object
▸{ temperature: 100, humidity: 59 }
11/11/2022, 4:35:13 PM   node: 1bbfa8432bacfa7a
msg.payload : Object
▸{ fab: "" }
11/11/2022, 4:35:28 PM   node: 88ffac2dbe8f0d0e
iot-2/type/weather/id/wea_today/evt/event2/fmt/json :
msg.payload : Object
▸{ temperature: 23, humidity: 45 }
11/11/2022, 4:36:23 PM   node: 1bbfa8432bacfa7a
msg.payload : Object
▸{ command: "AlarmOn" }
```

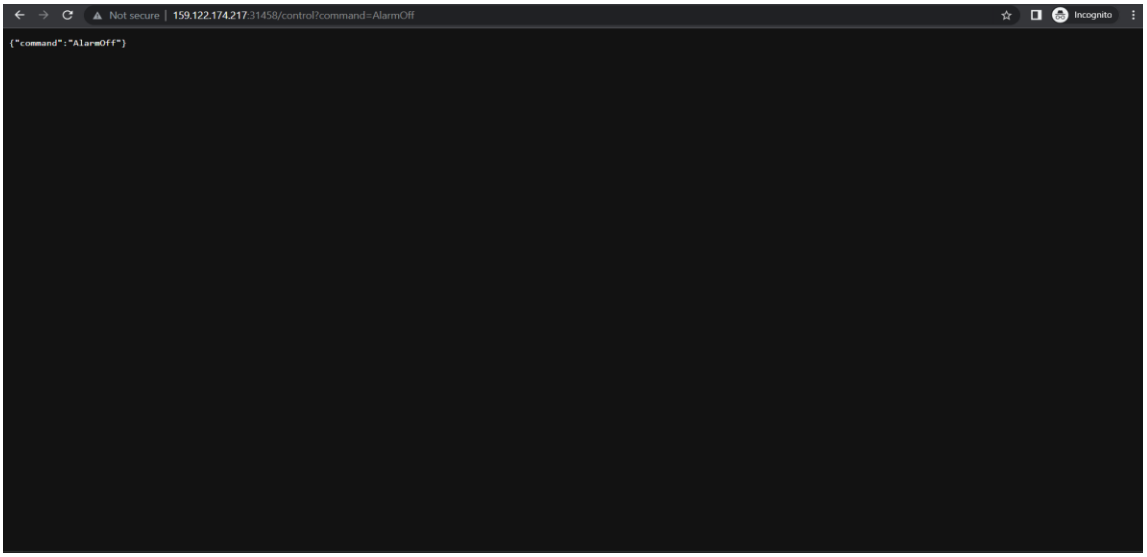
Display link: http://159.122.174.217:31458/ui





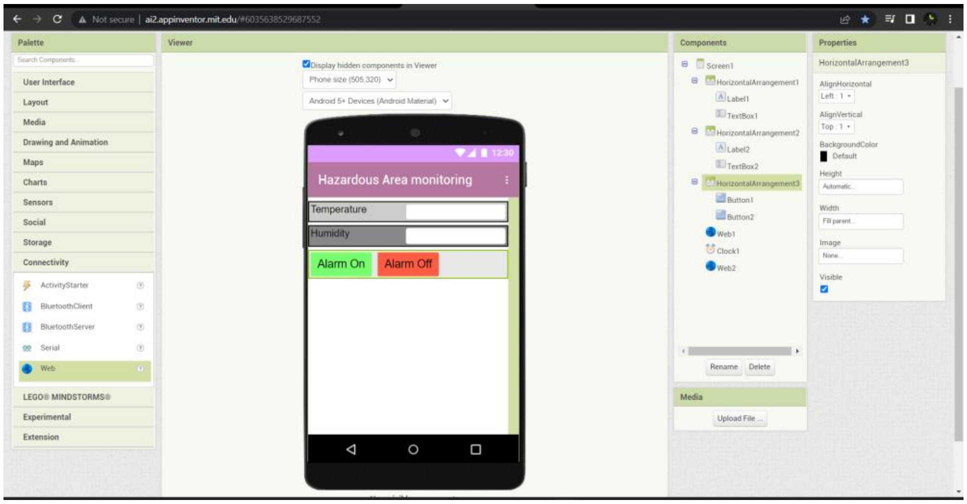
```
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:06:47) [MSC v.1914 32 bit (Inte
l)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
=========== RESTART: C:\Users\nithy\python 3.7\pubsubfinalcode.py ===========
2022-11-11 16:02:50,366   ibmiotf.device.Client      INFO    Connected successfu
lly: d:6cpv77:weather:wea_today
Published Temperature = 16 C Humidity = 41 % to IBM Watson
Published Temperature = 0 C Humidity = 12 % to IBM Watson
Published Temperature = 93 C Humidity = 92 % to IBM Watson
Command received: Alarm On
<ibmiotf.device.Command object at 0x03ABF350>
Command received: Alarm Off
<ibmiotf.device.Command object at 0x03ABF490>
Published Temperature = 79 C Humidity = 50 % to IBM Watson
Published Temperature = 77 C Humidity = 53 % to IBM Watson
Command received: Alarm On
<ibmiotf.device.Command object at 0x03ABF510>
Command received: Alarm Off
<ibmiotf.device.Command object at 0x03ABF6D0>
Command received: Alarm On
<ibmiotf.device.Command object at 0x03ABF750>
Published Temperature = 21 C Humidity = 13 % to IBM Watson
Command received: Alarm Off
<ibmiotf.device.Command object at 0x03ABF810>
Published Temperature = 47 C Humidity = 6 % to IBM Watson
Published Temperature = 60 C Humidity = 21 % to IBM Watson
Command received: Alarm On
<ibmiotf.device.Command object at 0x03ABF8B0>
Command received: Alarm Off
<ibmiotf.device.Command object at 0x03ABF990>
Published Temperature = 33 C Humidity = 74 % to IBM Watson
Command received: Alarm On
<ibmiotf.device.Command object at 0x03ABFB30>
Published Temperature = 73 C Humidity = 85 % to IBM Watson
Published Temperature = 33 C Humidity = 82 % to IBM Watson
Published Temperature = 23 C Humidity = 66 % to IBM Watson
Published Temperature = 1 C Humidity = 8 % to IBM Watson
```

STEP 2: Displaying Alarm condition   http://159.122.174.217:31458/control?command=AlarmOn

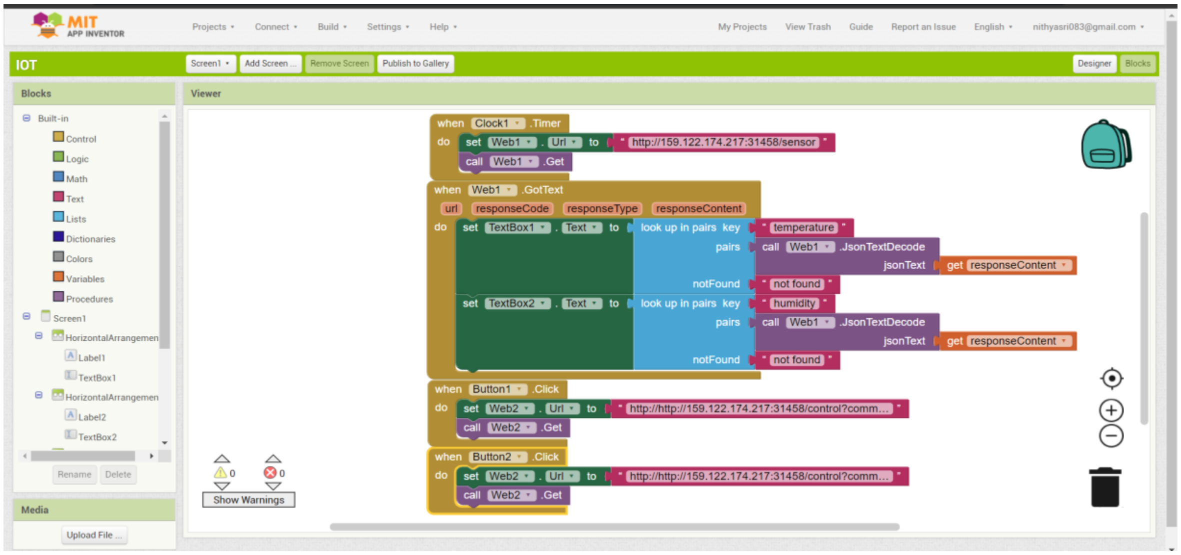


```
{"command":"AlarmOff"}
```

STEP 3: Connecting with the MIT Application Inventor to display temperature, humidity and alarm condition.

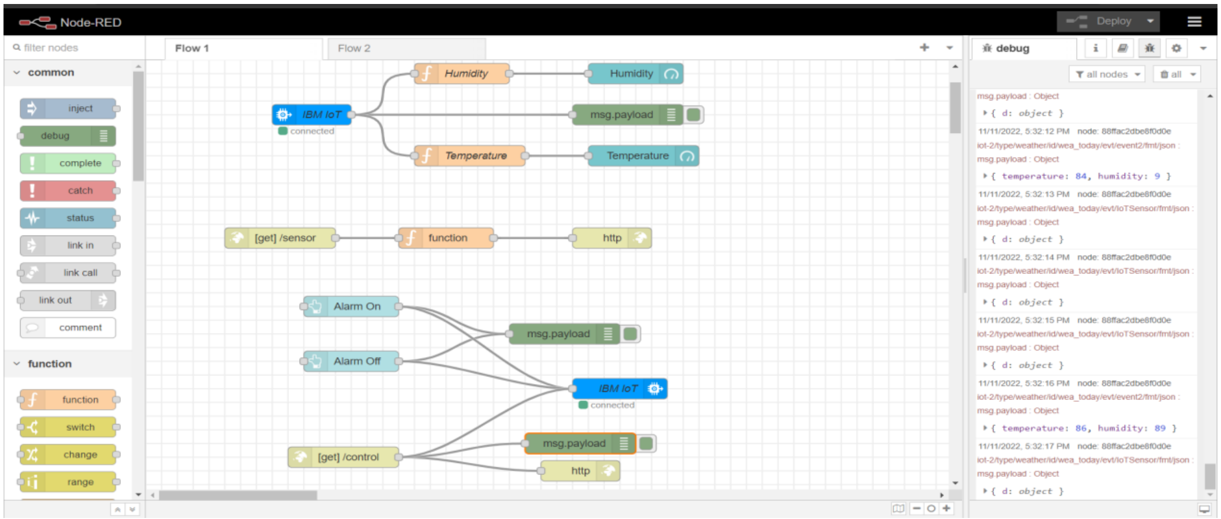


STEP-4: Attaching web link with the connected blocks in the MIT application inventor

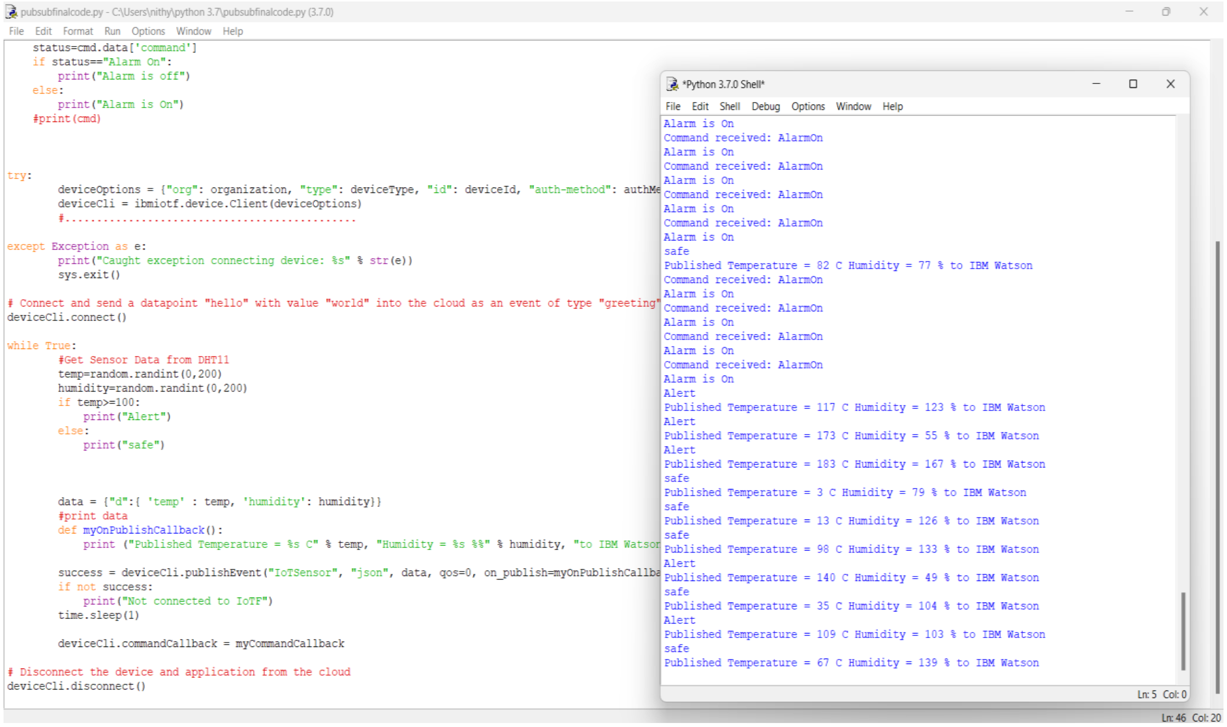


```
when Clock1 .Timer
do  set Web1 . Url to "http://159.122.174.217:31458/sensor"
    call Web1 .Get

when Web1 .GotText
 url  responseCode  responseType  responseContent
do  set TextBox1 . Text to  look up in pairs key "temperature"
                                           pairs  call Web1 .JsonTextDecode
                                                              jsonText  get responseContent
                                        notFound  "not found"
    set TextBox2 . Text to  look up in pairs key "humidity"
                                           pairs  call Web1 .JsonTextDecode
                                                              jsonText  get responseContent
                                        notFound  "not found"

when Button1 .Click
do  set Web2 . Url to "http://http://159.122.174.217:31458/control?comm..."
    call Web2 .Get

when Button2 .Click
do  set Web2 . Url to "http://http://159.122.174.217:31458/control?comm..."
    call Web2 .Get
```

STEP-5: Detecting high temperature and displaying “ALERT” message in the MIT application.



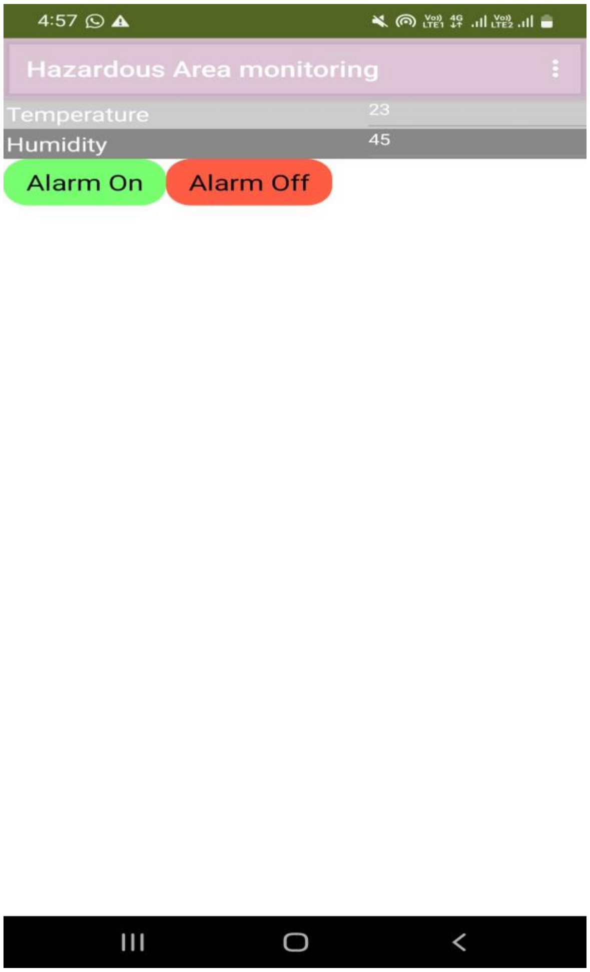
```
msg.payload : Object
▸{ d: object }
11/11/2022, 5:32:12 PM   node: 88ffac2dbe8f0d0e
iot-2/type/weather/id/wea_today/evt/event2/fmt/json :
msg.payload : Object
▸{ temperature: 84, humidity: 9 }
11/11/2022, 5:32:13 PM   node: 88ffac2dbe8f0d0e
iot-2/type/weather/id/wea_today/evt/IoTSensor/fmt/json :
msg.payload : Object
▸{ d: object }
11/11/2022, 5:32:14 PM   node: 88ffac2dbe8f0d0e
iot-2/type/weather/id/wea_today/evt/IoTSensor/fmt/json :
msg.payload : Object
▸{ d: object }
11/11/2022, 5:32:15 PM   node: 88ffac2dbe8f0d0e
iot-2/type/weather/id/wea_today/evt/IoTSensor/fmt/json :
msg.payload : Object
▸{ d: object }
11/11/2022, 5:32:16 PM   node: 88ffac2dbe8f0d0e
iot-2/type/weather/id/wea_today/evt/event2/fmt/json :
msg.payload : Object
▸{ temperature: 86, humidity: 89 }
11/11/2022, 5:32:17 PM   node: 88ffac2dbe8f0d0e
iot-2/type/weather/id/wea_today/evt/IoTSensor/fmt/json :
msg.payload : Object
▸{ d: object }
```


pubsubfinalcode.py - C:\Users\nithy\python 3.7\pubsubfinalcode.py (3.7.0)
File Edit Format Run Options Window Help
Python 3.7.0 Shell
File Edit Shell Debug Options Window Help
Ln: 5 Col: 0
Ln: 46 Col: 20

```python
    status=cmd.data['command']
    if status=="Alarm On":
        print("Alarm is off")
    else:
        print("Alarm is On")
    #print(cmd)



try:
        deviceOptions = {"org": organization, "type": deviceType, "id": deviceId, "auth-method": authMe
        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"
deviceCli.connect()

while True:
        #Get Sensor Data from DHT11
        temp=random.randint(0,200)
        humidity=random.randint(0,200)
        if temp>=100:
            print("Alert")
        else:
            print("safe")



        data = {"d":{ 'temp' : temp, 'humidity': humidity}}
        #print data
        def myOnPublishCallback():
            print ("Published Temperature = %s C" % temp, "Humidity = %s %%" % humidity, "to IBM Watsor

        success = deviceCli.publishEvent("IoTSensor", "json", data, qos=0, on_publish=myOnPublishCallba
        if not success:
            print("Not connected to IoTF")
        time.sleep(1)

        deviceCli.commandCallback = myCommandCallback

# Disconnect the device and application from the cloud
deviceCli.disconnect()
```

```
Alarm is On
Command received: AlarmOn
Alarm is On
Command received: AlarmOn
Alarm is On
Command received: AlarmOn
Alarm is On
Command received: AlarmOn
Alarm is On
safe
Published Temperature = 82 C Humidity = 77 % to IBM Watson
Command received: AlarmOn
Alarm is On
Command received: AlarmOn
Alarm is On
Command received: AlarmOn
Alarm is On
Command received: AlarmOn
Alarm is On
Alert
Published Temperature = 117 C Humidity = 123 % to IBM Watson
Alert
Published Temperature = 173 C Humidity = 55 % to IBM Watson
Alert
Published Temperature = 183 C Humidity = 167 % to IBM Watson
safe
Published Temperature = 3 C Humidity = 79 % to IBM Watson
safe
Published Temperature = 13 C Humidity = 126 % to IBM Watson
safe
Published Temperature = 98 C Humidity = 133 % to IBM Watson
Alert
Published Temperature = 140 C Humidity = 49 % to IBM Watson
safe
Published Temperature = 35 C Humidity = 104 % to IBM Watson
Alert
Published Temperature = 109 C Humidity = 103 % to IBM Watson
safe
Published Temperature = 67 C Humidity = 139 % to IBM Watson
```

STEP 6: Downloading apk file and building mobile application using python script for sensing temperature for hazardous area monitoring conditions in industrial areas.



Hazardous Area monitoring

Temperature 23

Humidity 45