SENDING DATA FROM RASPBERRY-PI TO IBM WATSON

Team ID	PNT2022TMID54370
Project Name	GAS LEAKAGE MONITORING AND ALERTING SYSTEM FOR INDUSTRIES

Aim:

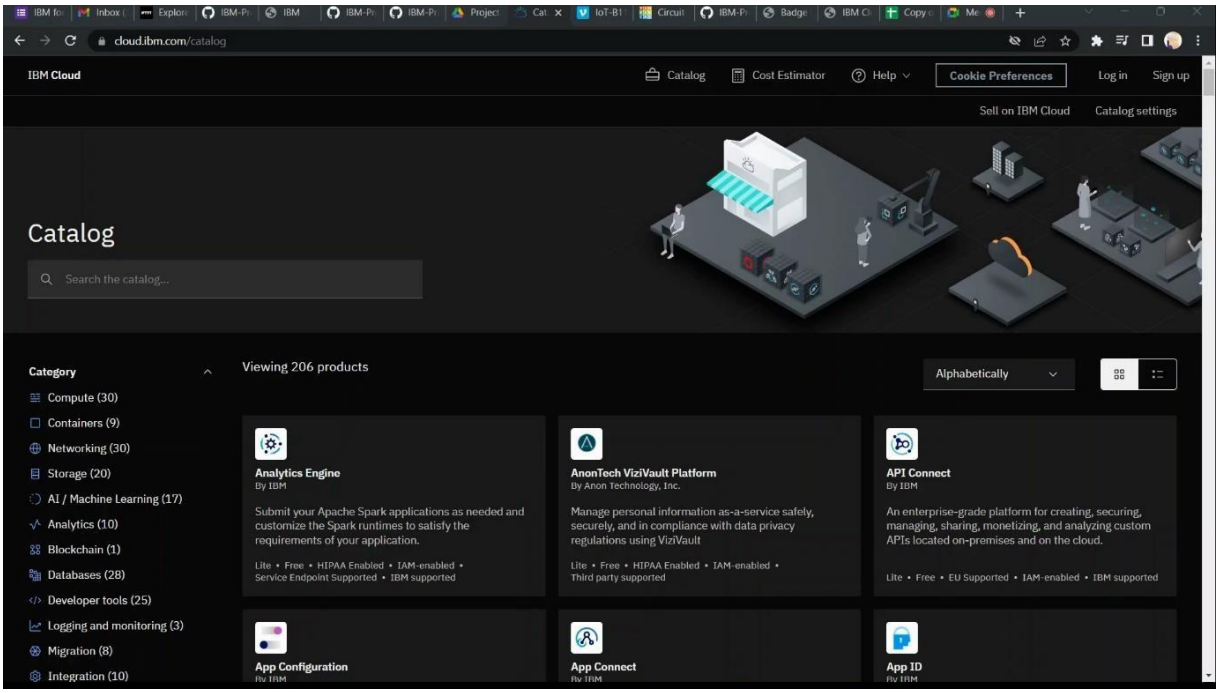
To send sensor data from the Raspberry Pi to IBM Watson. In our case, the data is from DHT sensors.

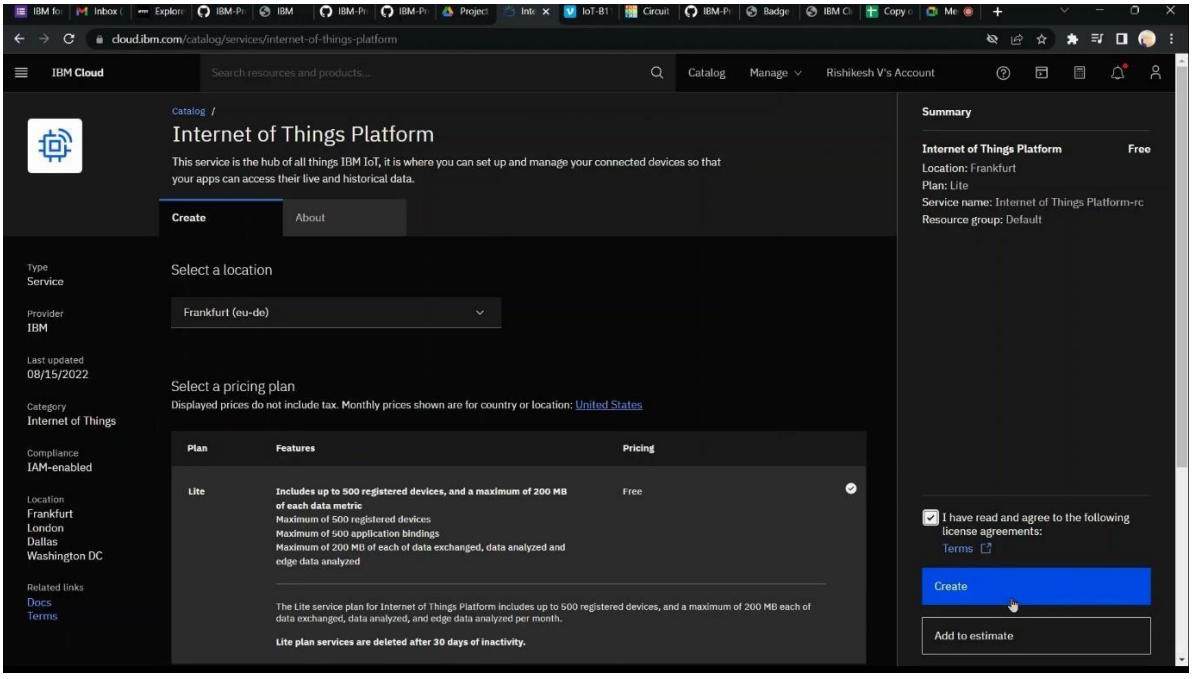
Requirements:

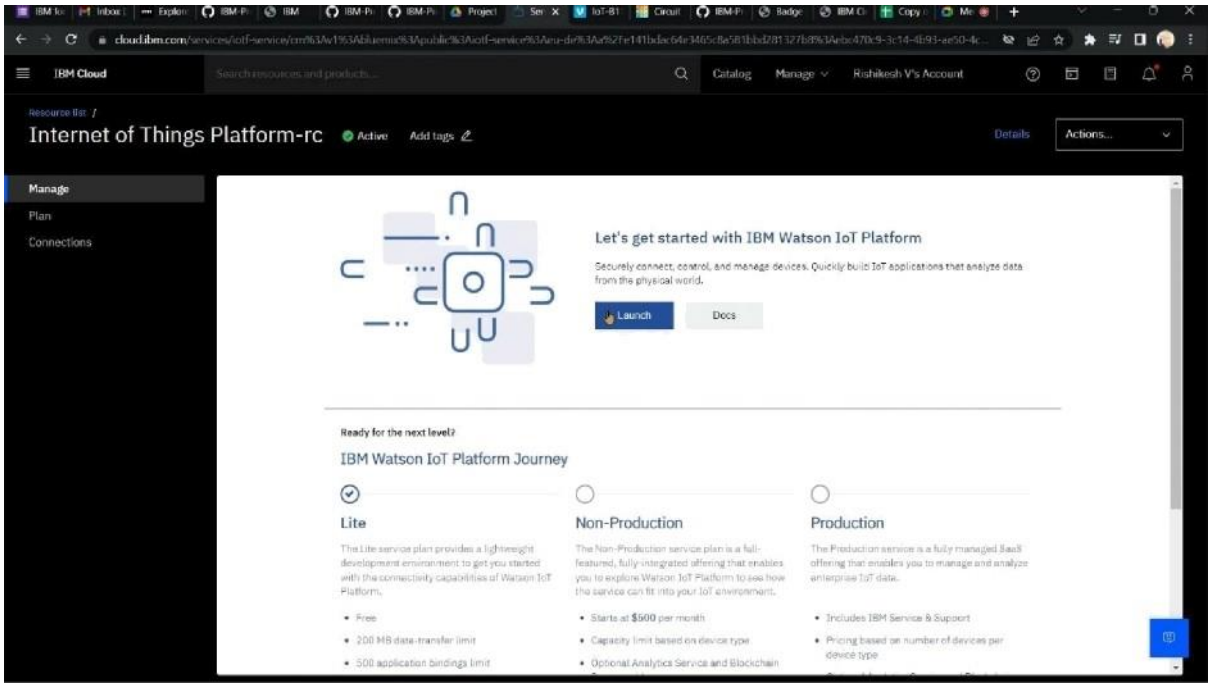
- Hardware Requirements
  - RASPBERRY-PI (3B)(WITH ETHERNET CABLE OR WIFI CONNECTED)
  - USB MOUSE
  - USB KEYBOARD
  - DHT-11 Sensor
  - MONITOR
  - RASPBERRY'S POWER SUPPLY
  - VGA TO HDMI CABLE
  - Connecting Wires
- Software Requirements
  - IBM BLUEMIX ACCOUNT

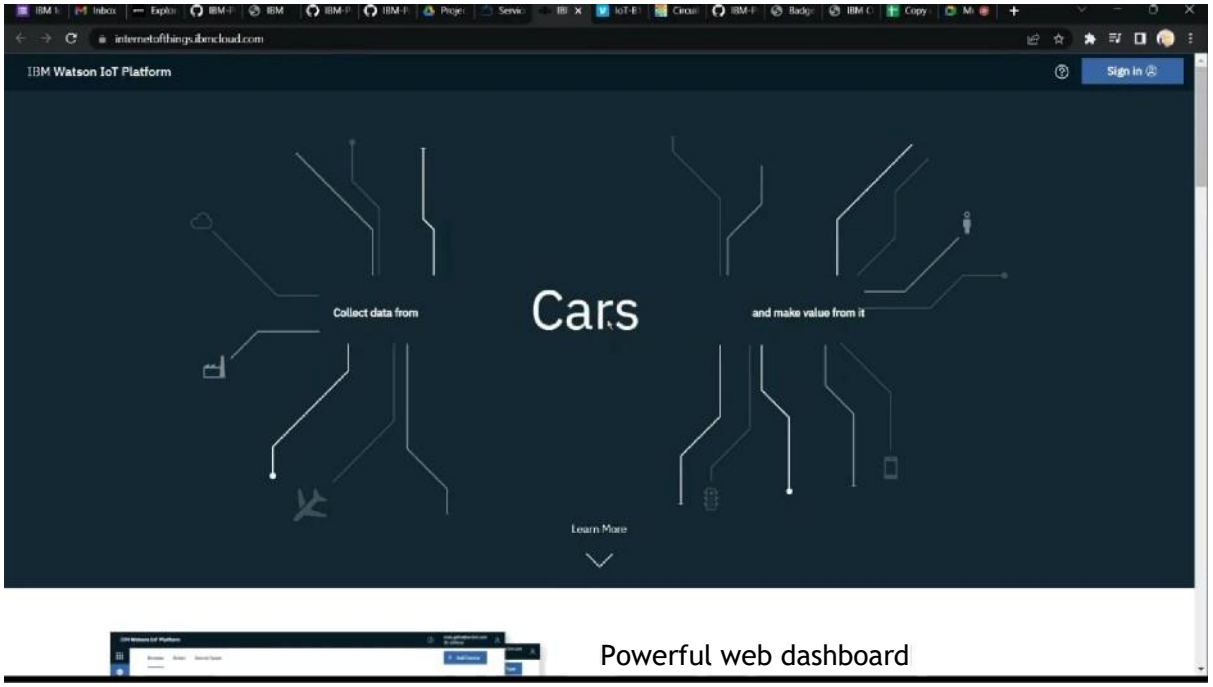
Procedure

- Create an Device in IBM WATSON

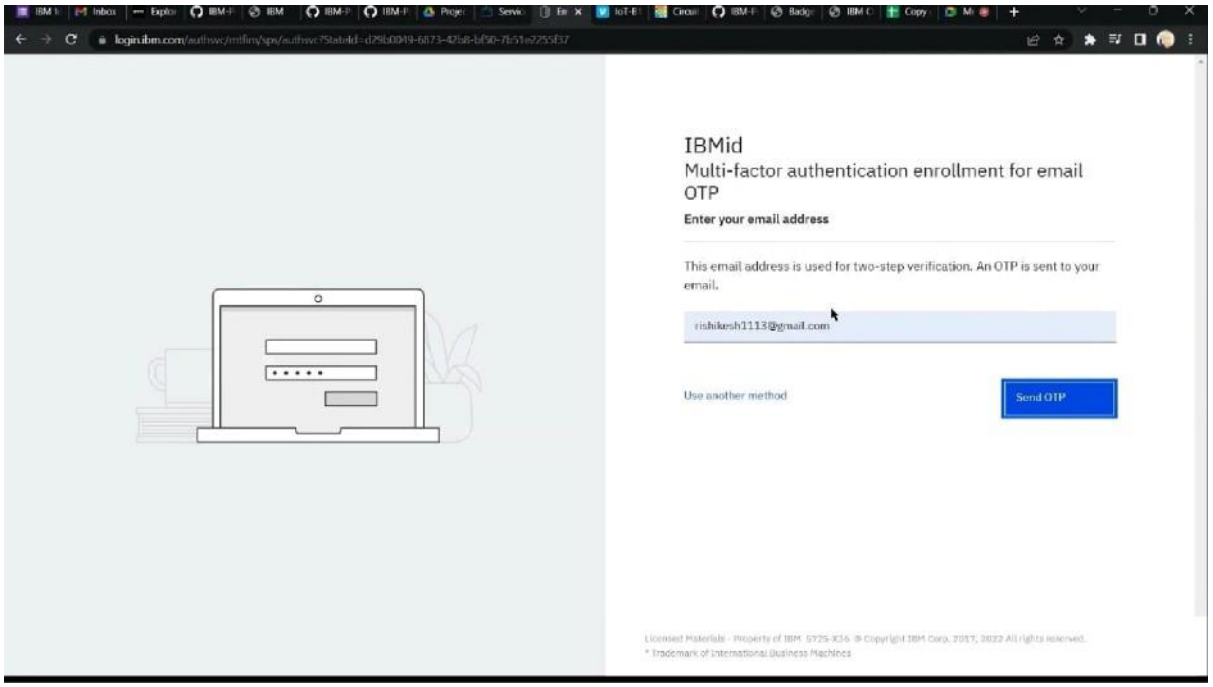

cloud.ibm.com/catalog
IBM Cloud
Catalog
Cost Estimator
Help
Cookie Preferences
Log in
Sign up
Sell on IBM Cloud
Catalog settings
Catalog
Search the catalog...
Category
Compute (30)
Containers (9)
Networking (30)
Storage (20)
AI / Machine Learning (17)
Analytics (10)
Blockchain (1)
Databases (28)
Developer tools (25)
Logging and monitoring (3)
Migration (8)
Integration (10)
Viewing 206 products
Alphabetically
Analytics Engine
By IBM
Submit your Apache Spark applications as needed and customize the Spark runtimes to satisfy the requirements of your application.
Lite • Free • HIPAA Enabled • IAM-enabled • Service Endpoint Supported • IBM supported
AnonTech ViziVault Platform
By Anon Technology, Inc.
Manage personal information as-a-service safely, securely, and in compliance with data privacy regulations using ViziVault
Lite • Free • HIPAA Enabled • IAM-enabled • Third party supported
API Connect
By IBM
An enterprise-grade platform for creating, securing, managing, sharing, monetizing, and analyzing custom APIs located on-premises and on the cloud.
Lite • Free • EU Supported • IAM-enabled • IBM supported
App Configuration
App Connect
App ID

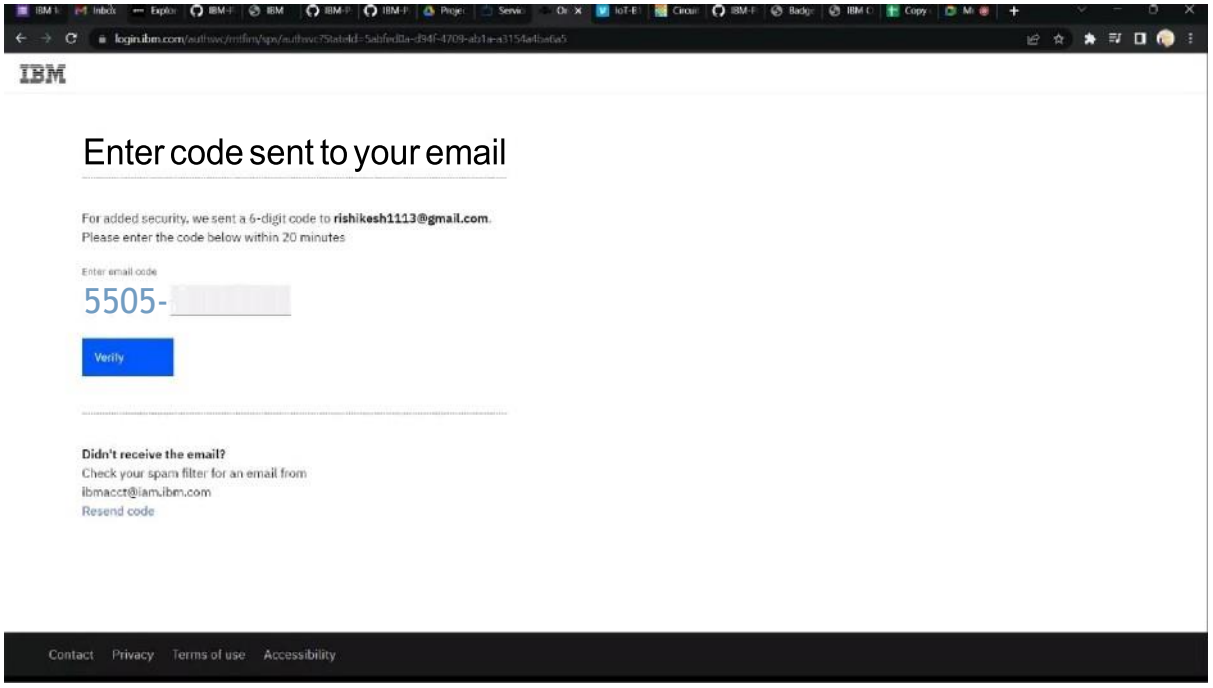

cloud.ibm.com/catalog/services/internet-of-things-platform
IBM Cloud
Search resources and products...
Catalog
Manage
Rishikesh V's Account
Catalog /
Internet of Things Platform
This service is the hub of all things IBM IoT, it is where you can set up and manage your connected devices so that your apps 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
Dallas
Washington DC
Related links
Docs
Terms
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
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-rc
Resource group: Default
I have read and agree to the following license agreements:
Terms
Create
Add to estimate

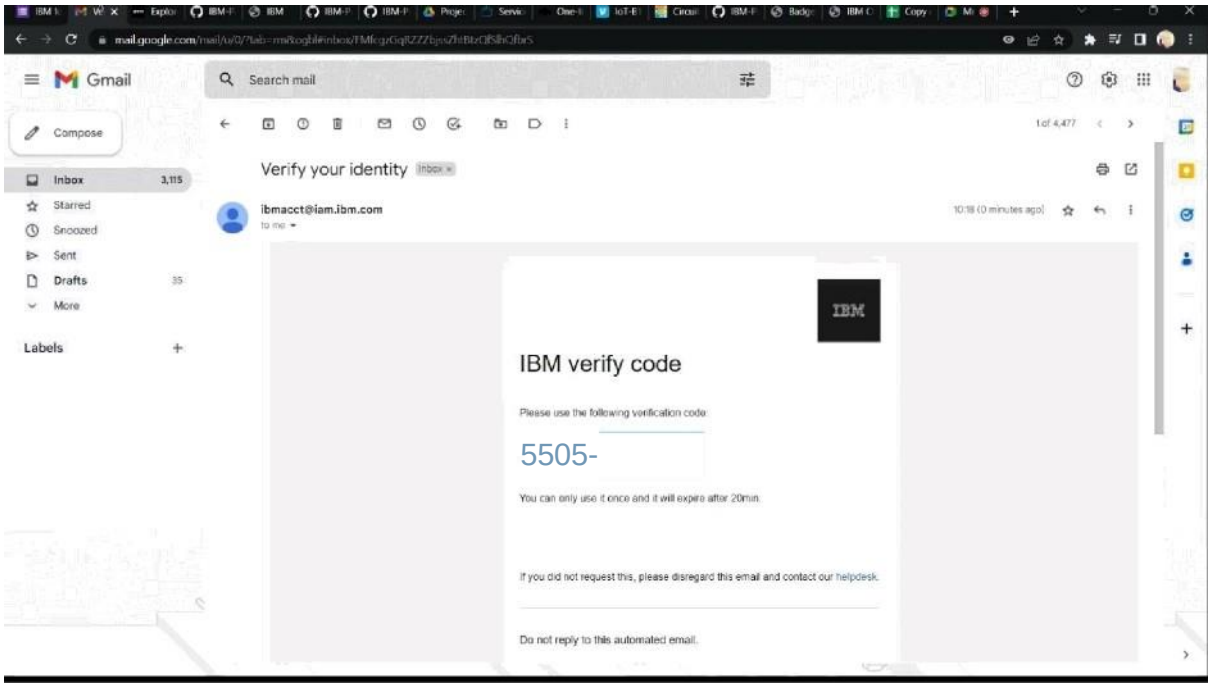


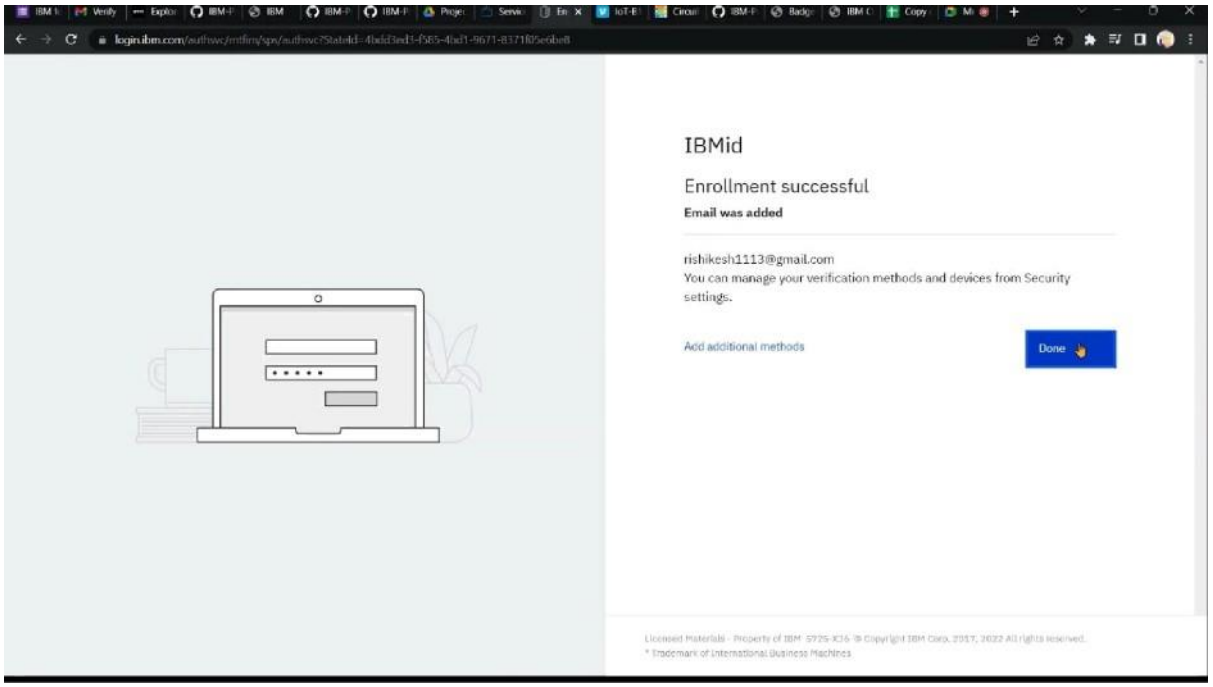


Powerful web dashboard

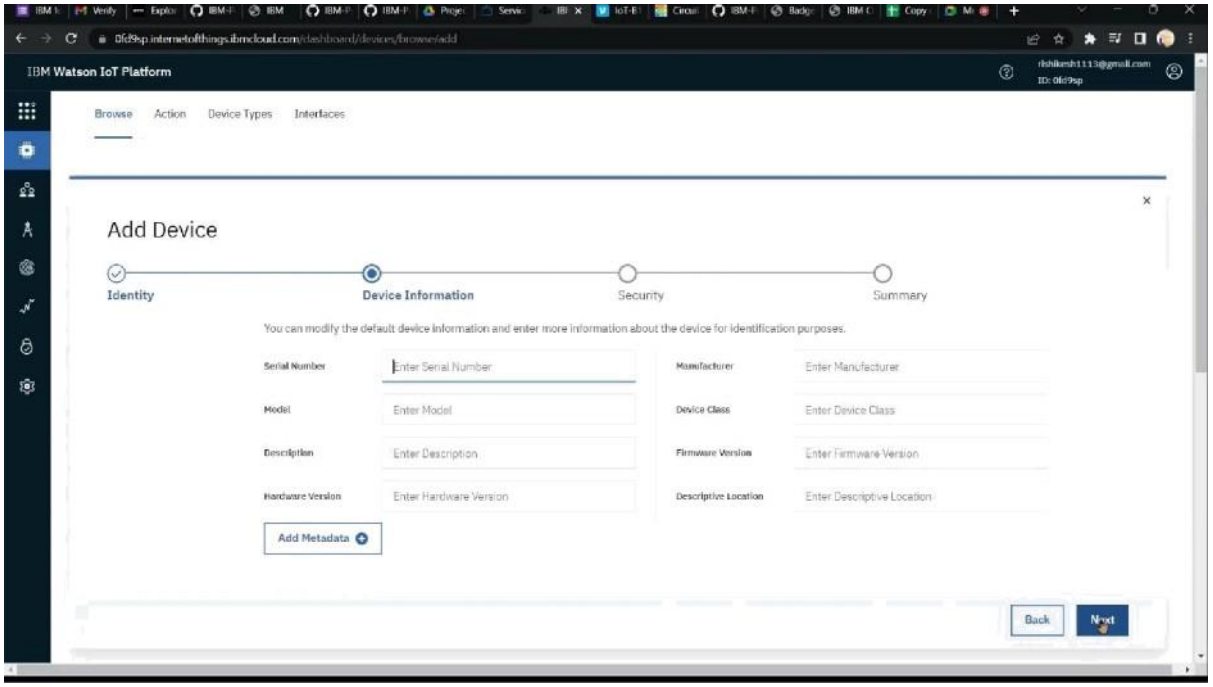

IBMid
Multi-factor authentication enrollment for email OTP
Enter your email address
This email address is used for two-step verification. An OTP is sent to your email.
rishikesh1113@gmail.com
Use another method
Send OTP


IBM
Enter code sent to your email
For added security, we sent a 6-digit code to rishikesh1113@gmail.com.
Please enter the code below within 20 minutes
Enter email code
5505-
Verify
Didn't receive the email?
Check your spam filter for an email from
ibmacct@iam.ibm.com
Resend code
Contact
Privacy
Terms of use
Accessibility


Gmail
Search mail
Compose
Inbox 3,115
Starred
Snoozed
Sent
Drafts 35
More
Labels
Verify your identity
ibmacct@iam.ibm.com
IBM
IBM verify code
Please use the following verification code:
5505-
You can only use it once and it will expire after 20min.
If you did not request this, please disregard this email and contact our helpdesk.
Do not reply to this automated email.


IBMid
Enrollment successful
Email was added
rishikesh1113@gmail.com
You can manage your verification methods and devices from Security settings.
Add additional methods
Done

Browse Devices



yrse Action Dev-ce Types Interfaces

Add Device

Identity | Device Information | Security | Summary

Ih«eaexoop!onsbrseeñigadeñoeaWMWirinloMn

Auto-generated authentication token (default)

Allow tfie service to generate an autt-eu fication token lor you.

cWaMers and ymbols.*\he token s r eturned to you at"t e end t@ q@p ,pgjqtyqpp,

Self-provided authentication token

Provide your own authentication taken for this dence 7he

8 include hypher+s, 8888^ • and periods. 8 8•8 '* q} reply d meters,dictionary words, user narr+es. or other

Nake a note of the generated lohe-n. Lost a Mthenfication tokens cannot be recovered. Tokens are encryped before

Device Driltdown - 1234

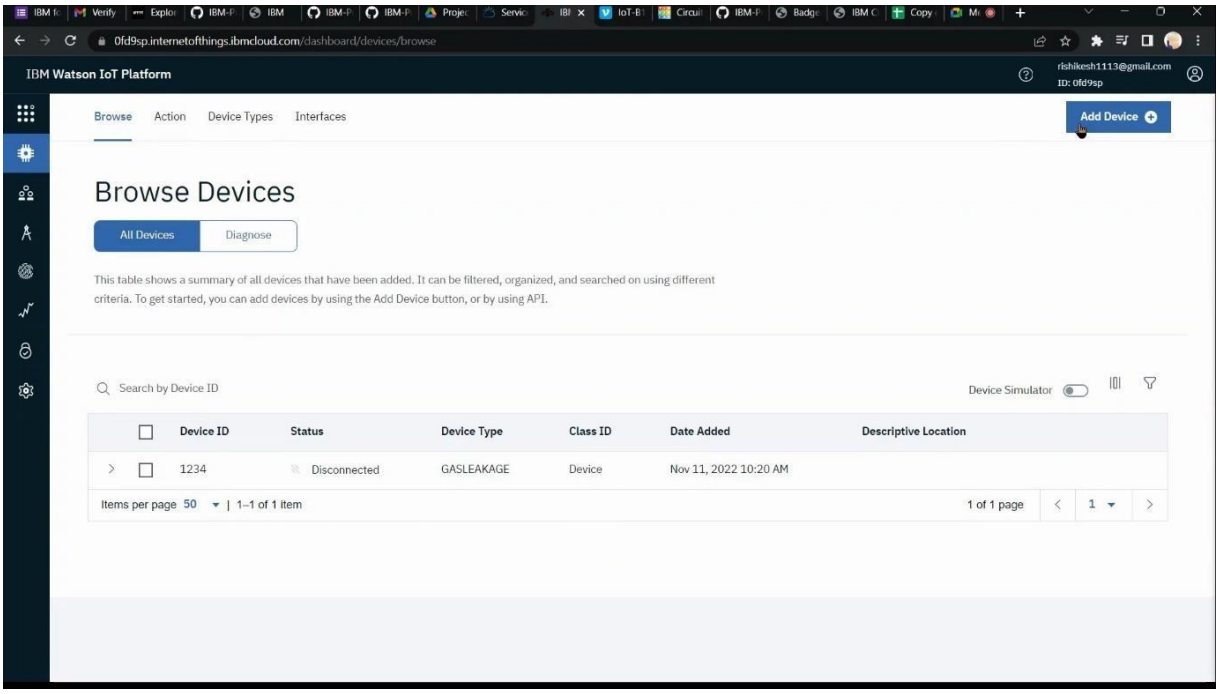
Device Credentials

Connection Information

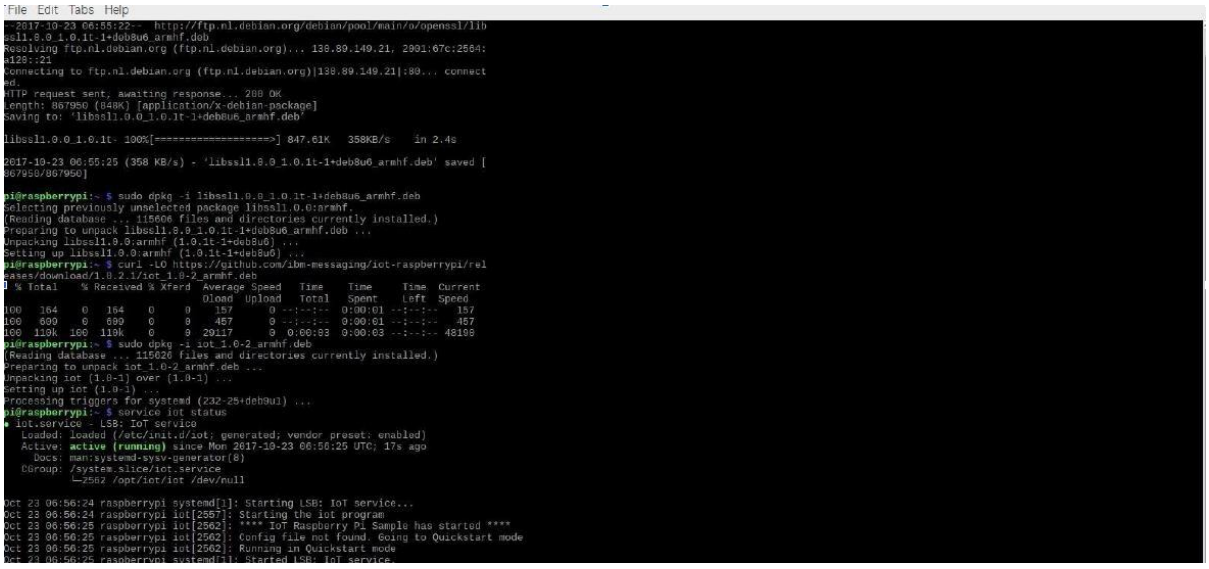
Device Credentials

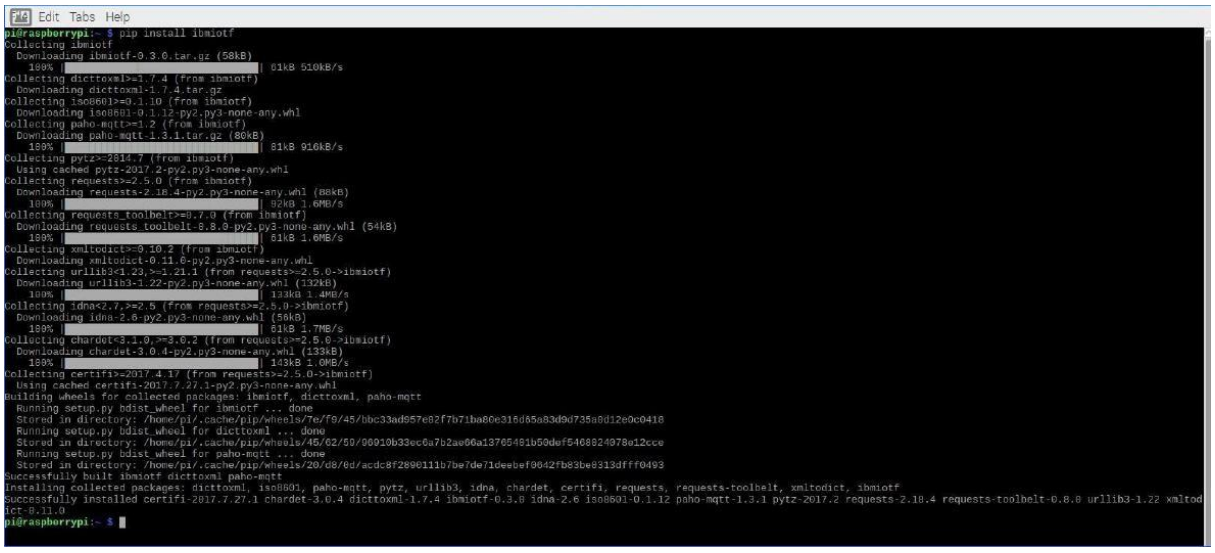
You registered your device to the organ fzatfon. Add these credentia ls to the device tc connect 4t to the pWrrn. After the device is conred, you can navigate to view

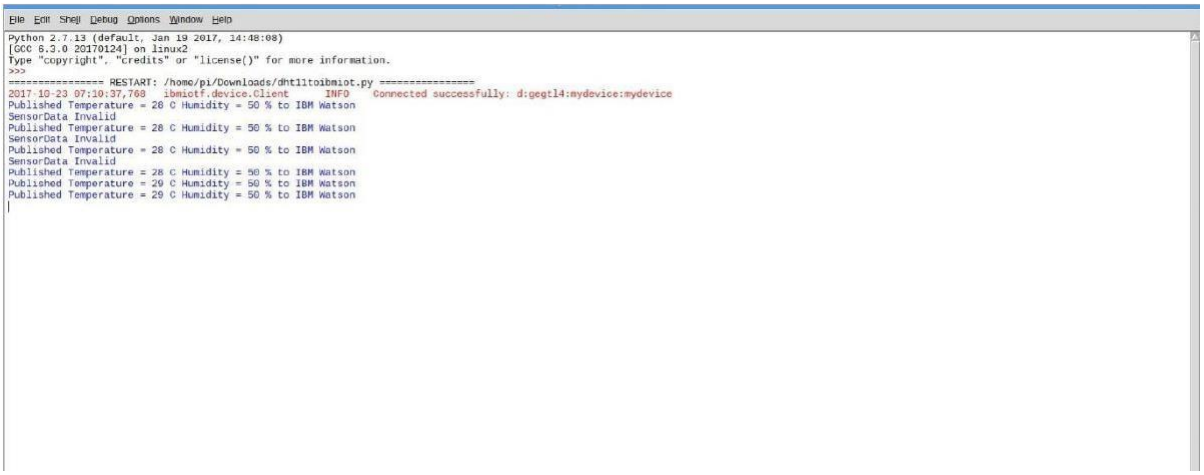
Conn'ection Information



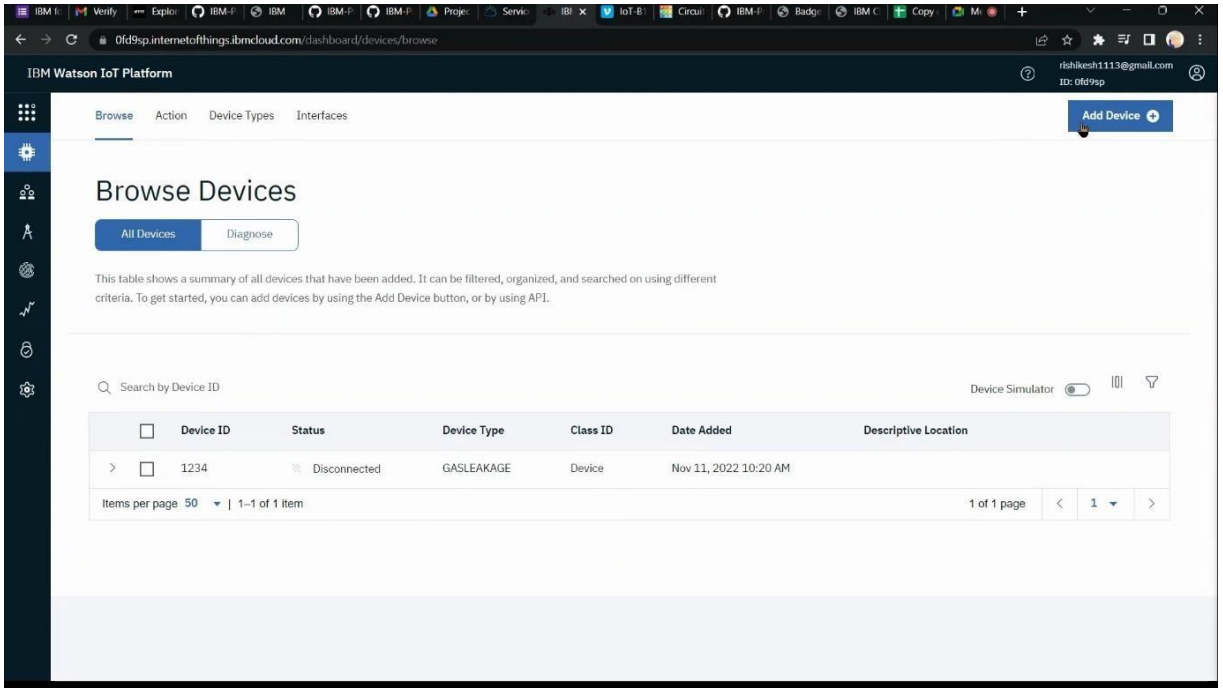
- Install necessary package on the Raspberry pi

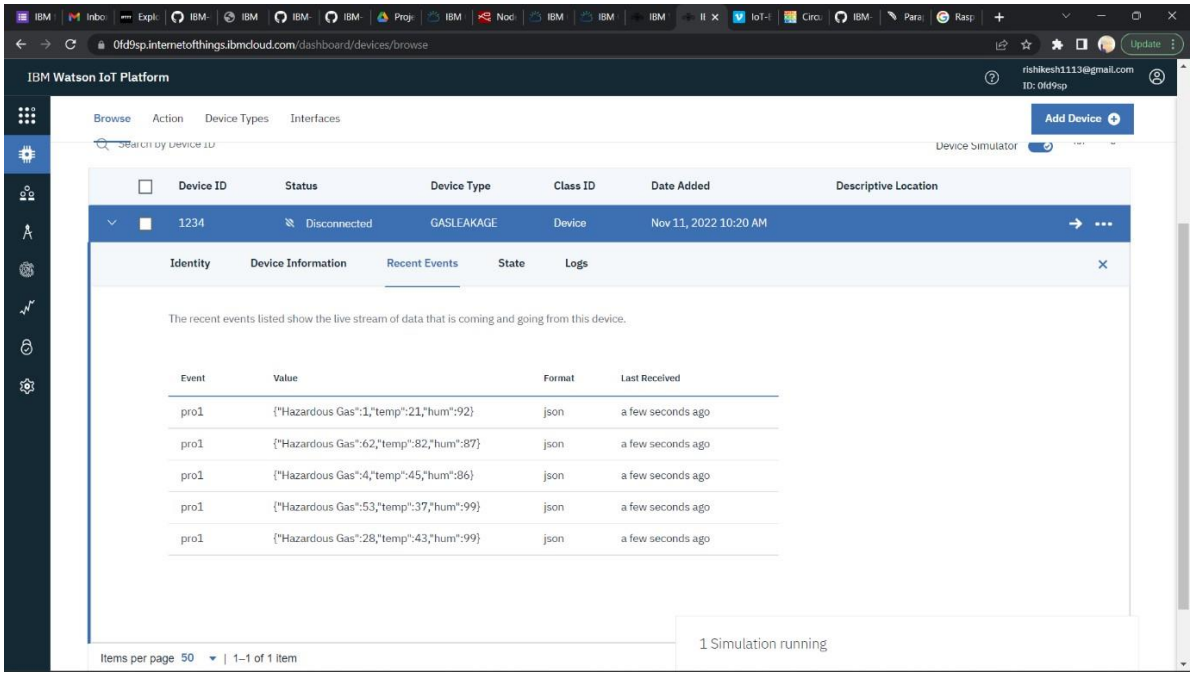



Edit Tabs Help
pi@raspberrypi:~ $ pip install ibmiotf
Collecting ibmiotf
Downloading ibmiotf-0.3.0.tar.gz (58kB)
100% | 61kB 510kB/s
Collecting dicttoxml>=1.7.4 (from ibmiotf)
Downloading dicttoxml-1.7.4.tar.gz
Collecting iso8601>=0.1.10 (from ibmiotf)
Downloading iso8601-0.1.12-py2.py3-none-any.whl
Collecting paho-mqtt>=1.2 (from ibmiotf)
Downloading paho-mqtt-1.3.1.tar.gz (80kB)
100% | 81kB 916kB/s
Collecting pytz>=2014.7 (from ibmiotf)
Using cached pytz-2017.2-py2.py3-none-any.whl
Collecting requests>=2.5.0 (from ibmiotf)
Downloading requests-2.18.4-py2.py3-none-any.whl (88kB)
100% | 92kB 1.6MB/s
Collecting requests_toolbelt>=0.7.0 (from ibmiotf)
Downloading requests_toolbelt-0.8.0-py2.py3-none-any.whl (54kB)
100% | 61kB 1.6MB/s
Collecting xmltodict>=0.10.2 (from ibmiotf)
Downloading xmltodict-0.11.0-py2.py3-none-any.whl
Collecting urllib3<1.23,>=1.21.1 (from requests>=2.5.0->ibmiotf)
Downloading urllib3-1.22-py2.py3-none-any.whl (132kB)
100% | 133kB 1.4MB/s
Collecting idna<2.7,>=2.5 (from requests>=2.5.0->ibmiotf)
Downloading idna-2.6-py2.py3-none-any.whl (56kB)
100% | 61kB 1.7MB/s
Collecting chardet<3.1.0,>=3.0.2 (from requests>=2.5.0->ibmiotf)
Downloading chardet-3.0.4-py2.py3-none-any.whl (133kB)
100% | 143kB 1.0MB/s
Collecting certifi>=2017.4.17 (from requests>=2.5.0->ibmiotf)
Using cached certifi-2017.7.27.1-py2.py3-none-any.whl
Building wheels for collected packages: ibmiotf, dicttoxml, paho-mqtt
Running setup.py bdist_wheel for ibmiotf ... done
Stored in directory: /home/pi/.cache/pip/wheels/7e/f9/45/bbc33ad957e02f7b71ba80e316d85a83d9d735a8d12e0c0418
Running setup.py bdist_wheel for dicttoxml ... done
Stored in directory: /home/pi/.cache/pip/wheels/45/62/50/90010b33ec6a7b2ae66a13765481b50def5408824978a12cce
Running setup.py bdist_wheel for paho-mqtt ... done
Stored in directory: /home/pi/.cache/pip/wheels/20/d8/0d/acdc8f2890111b7be7de71deebef0042fb83be8313dfff0493
Successfully built ibmiotf dicttoxml paho-mqtt
Installing collected packages: dicttoxml, iso8601, paho-mqtt, pytz, urllib3, idna, chardet, certifi, requests, requests-toolbelt, xmltodict, ibmiotf
Successfully installed certifi-2017.7.27.1 chardet-3.0.4 dicttoxml-1.7.4 ibmiotf-0.3.0 idna-2.6 iso8601-0.1.12 paho-mqtt-1.3.1 pytz-2017.2 requests-2.18.4 requests-toolbelt-0.8.0 urllib3-1.22 xmltodict-0.11.0
pi@raspberrypi:~ $

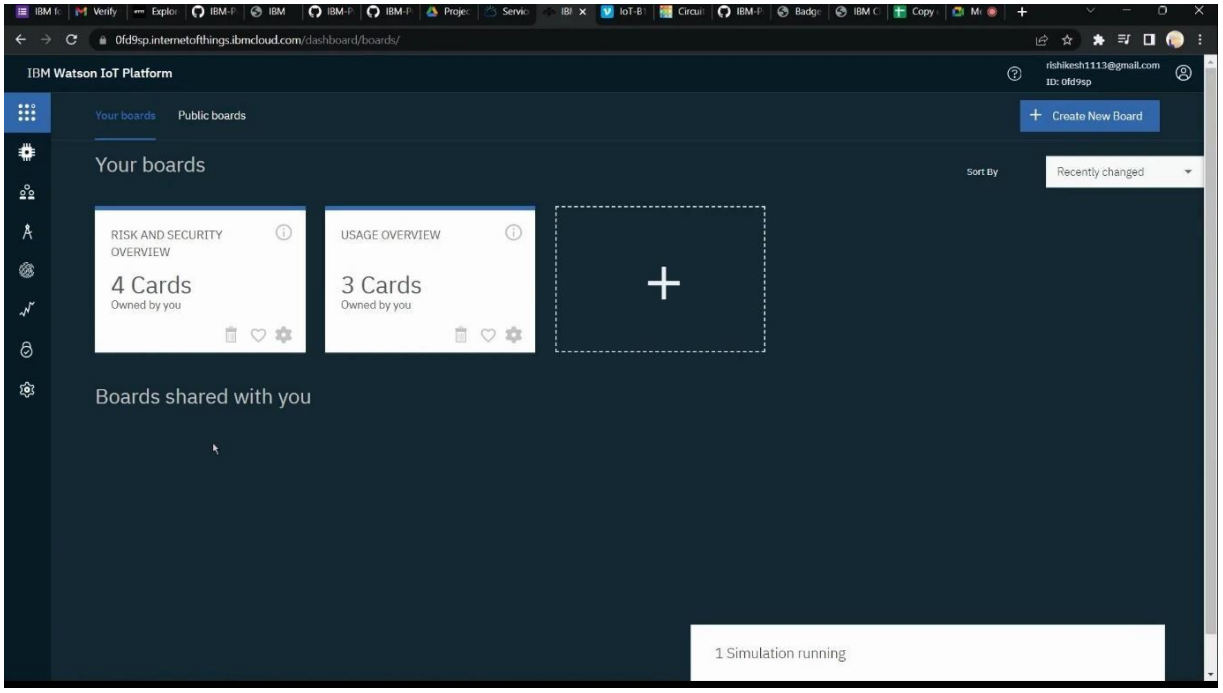

File Edit Shell Debug Options Window Help
Python 2.7.13 (default, Jan 19 2017, 14:48:08)
[GCC 6.3.0 20170124] on linux2
Type "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: /home/pi/Downloads/dht11toibmiot.py ==========
2017-10-23 07:10:37,768 ibmiotf.device.Client INFO Connected successfully: d:gegtl4:mydevice:mydevice
Published Temperature = 28 C Humidity = 50 % to IBM Watson
SensorData Invalid
Published Temperature = 28 C Humidity = 50 % to IBM Watson
SensorData Invalid
Published Temperature = 28 C Humidity = 50 % to IBM Watson
SensorData Invalid
Published Temperature = 28 C Humidity = 50 % to IBM Watson
Published Temperature = 29 C Humidity = 50 % to IBM Watson
Published Temperature = 29 C Humidity = 50 % to IBM Watson

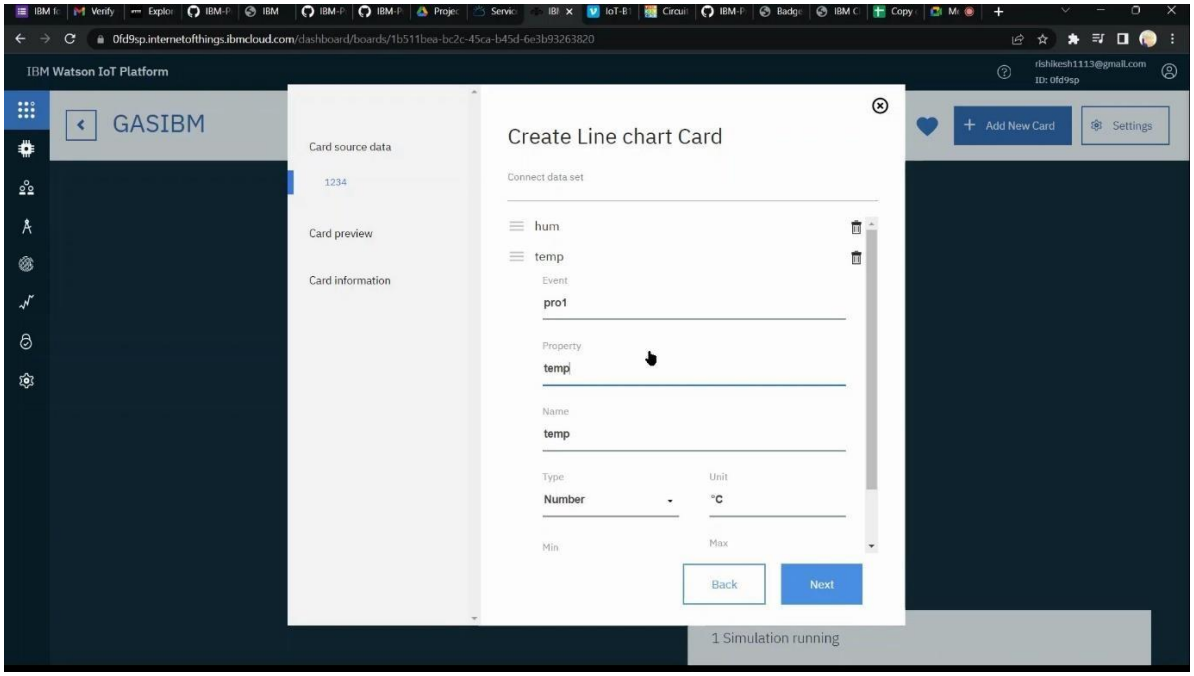
- Check for the Data to be sent to IBM Bluemix

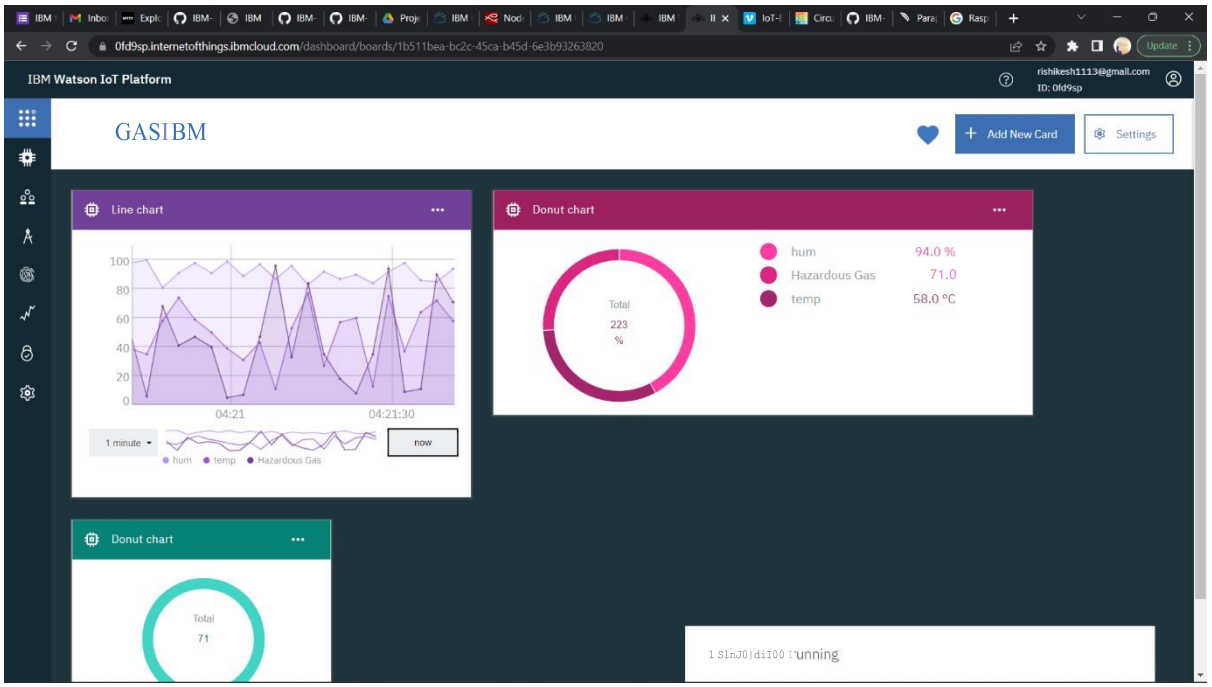




- Create boards and cards for visualization






0fd9sp.internetofthings.ibmcloud.com/dashboard/boards/1b511bea-bc2c-45ca-b45d-6e3b93263820
IBM Watson IoT Platform
rishikesh1113@gmail.com
ID: 0fd9sp
GASIBM
Add New Card
Settings
Line chart
100
80
60
40
20
0
04:21
04:21:30
1 minute
now
hum
temp
Hazardous Gas
Donut chart
Total
223
%
hum 94.0 %
Hazardous Gas 71.0
temp 58.0 °C
Donut chart
Total
71
unning