GAS LEAKAGE MONITORING & ALERTING SYSTEM FOR INDUSTRIES

SENDING DATA FROM RASPBERRY-PITO IBM WATSON

Team ID	PNT2022TMID21717
Project Name	Project - Gas leakage monitoring and alerting system for industries

Aim:

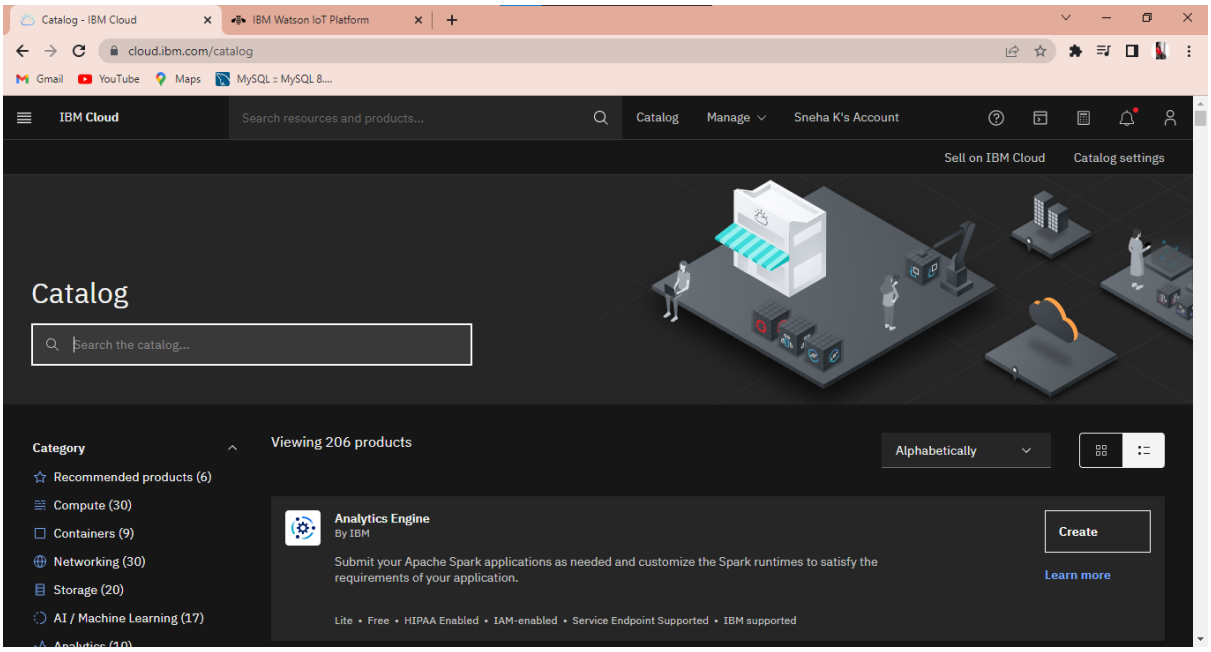
To send sensor data from the Raspberry Pi to IBM Watson. In our case, the data is from DHT sensors.

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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Search resources and products...
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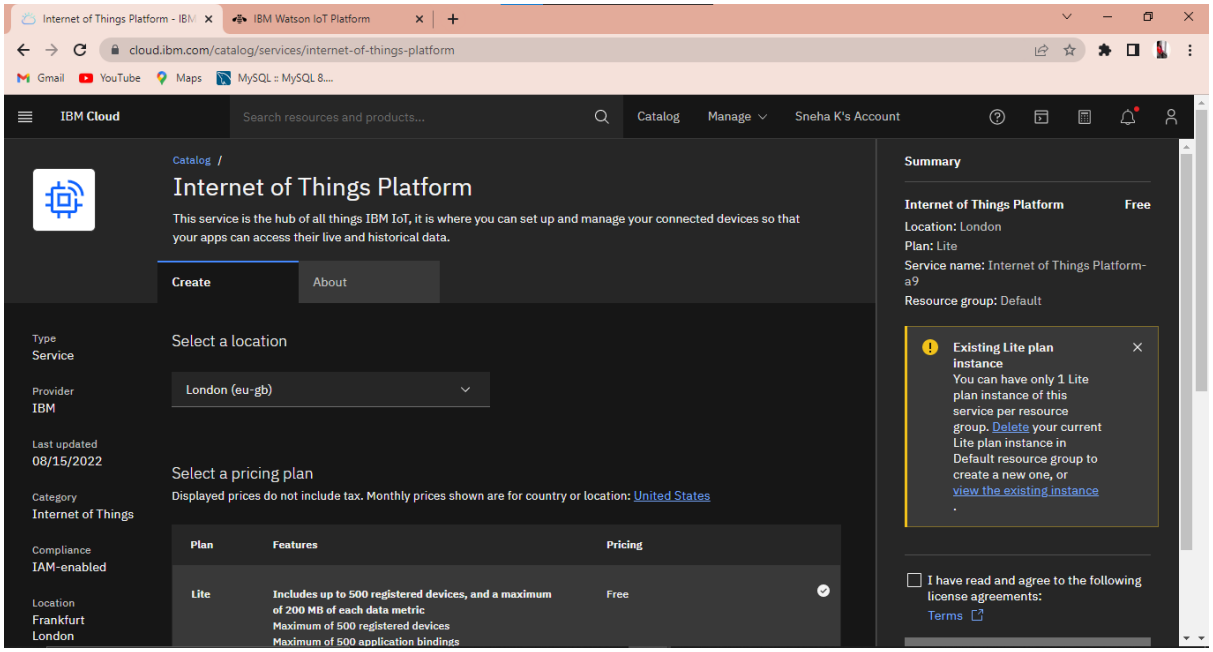
Search the catalog...
Category
Recommended products (6)
Compute (30)
Containers (9)
Networking (30)
Storage (20)
AI / Machine Learning (17)
Viewing 206 products
Alphabetically
Analytics Engine
By IBM
Submit your Apache Spark applications as needed and customize the Spark runtimes to satisfy the requirements of your application.
Lite • Free • HIPAA Enabled • IAM-enabled • Service Endpoint Supported • IBM supported
Create
Learn more


Internet of Things Platform - IBM
IBM Watson IoT Platform
cloud.ibm.com/catalog/services/internet-of-things-platform
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IBM Cloud
Search resources and products...
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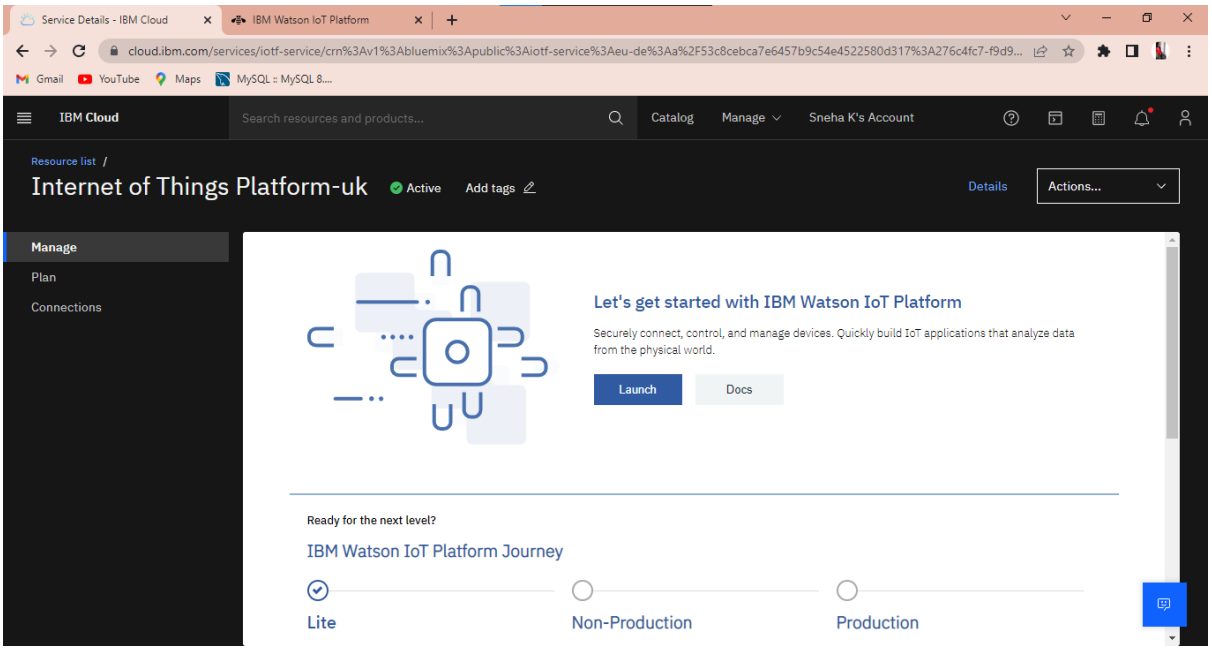
Internet of Things Platform
This service is the hub of all things IBM IoT, it is where you can set up and manage your connected devices so that your apps can access their live and historical data.
Create
About
Type
Service
Provider
IBM
Last updated
08/15/2022
Category
Internet of Things
Compliance
IAM-enabled
Location
Frankfurt
London
Select a location
London (eu-gb)
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
Free
Summary
Internet of Things Platform
Free
Location: London
Plan: Lite
Service name: Internet of Things Platform-a9
Resource group: Default
Existing Lite plan instance
You can have only 1 Lite plan instance of this service per resource group. Delete your current Lite plan instance in Default resource group to create a new one, or view the existing instance.
I have read and agree to the following license agreements:
Terms


Service Details - IBM Cloud
IBM Watson IoT Platform
cloud.ibm.com/services/iotf-service/crn%3Av1%3Abluemix%3Apublic%3Aiotf-service%3Aeu-de%3Aa%2F53c8cebca7e6457b9c54e4522580d317%3A276c4fc7-f9d9...
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MySQL :: MySQL 8....
IBM Cloud
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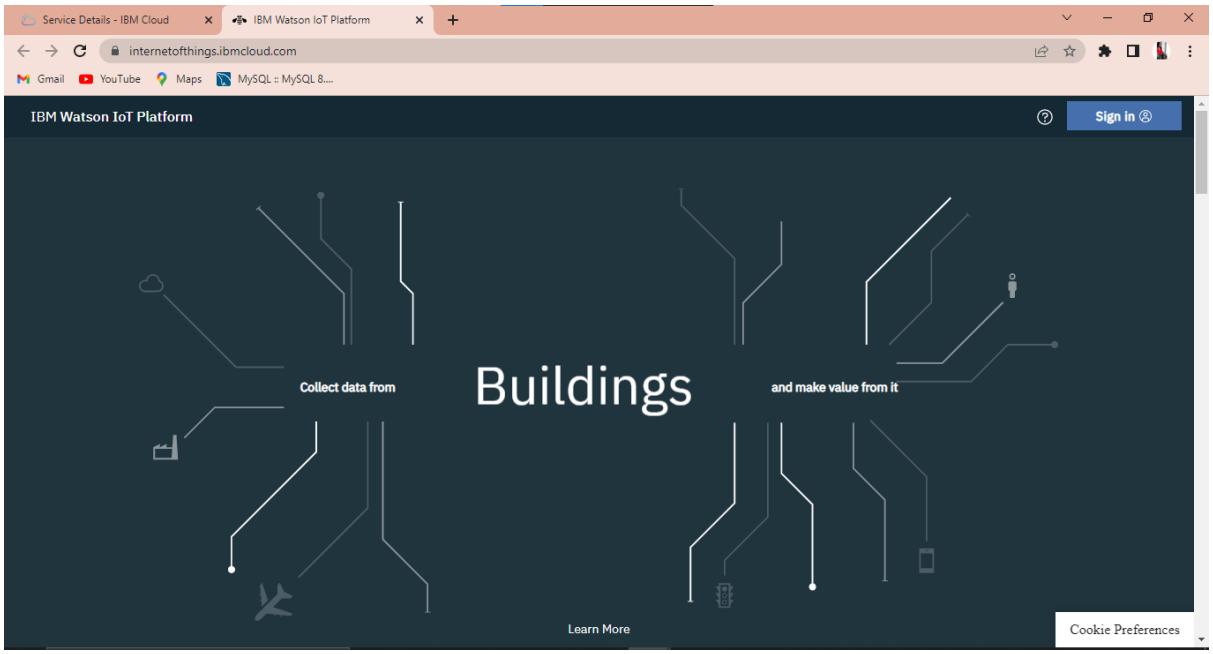
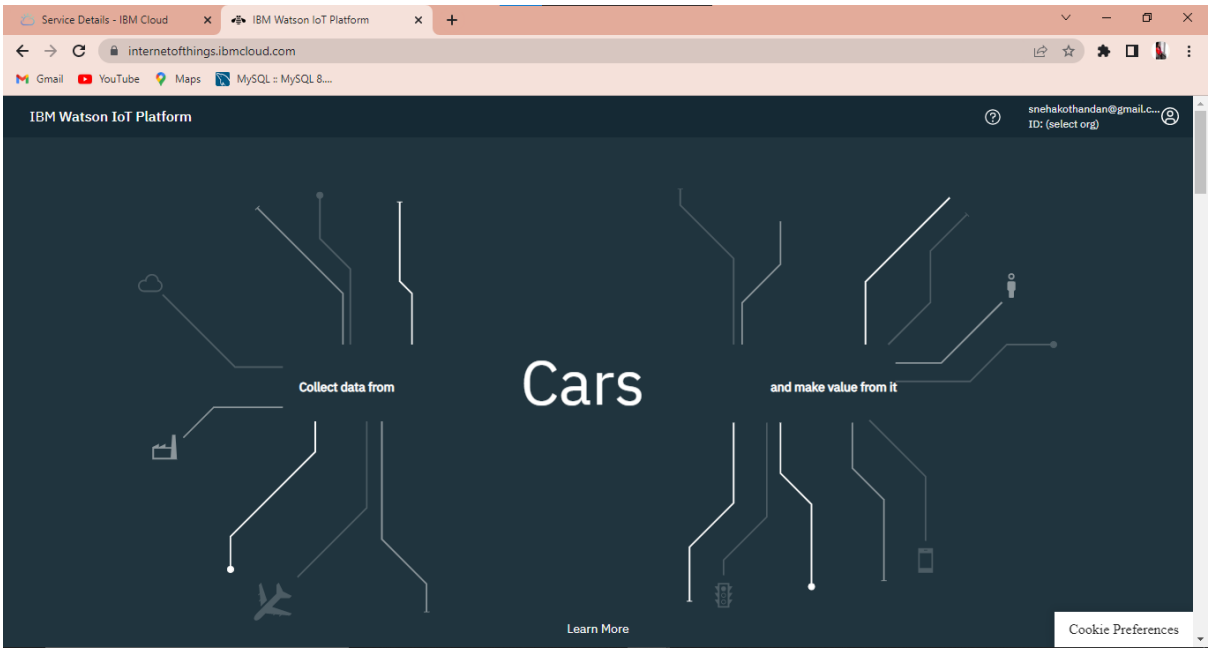
Catalog
Manage
Sneha K's Account
Resource list /
Internet of Things Platform-uk
Active
Add tags
Details
Actions...
Manage
Plan
Connections
Let's get started with IBM Watson IoT Platform
Securely connect, control, and manage devices. Quickly build IoT applications that analyze data from the physical world.
Launch
Docs
Ready for the next level?
IBM Watson IoT Platform Journey
Lite
Non-Production
Production


Service Details - IBM Cloud
IBM Watson IoT Platform
internetofthings.ibmcloud.com
Gmail
YouTube
Maps
MySQL :: MySQL 8....
IBM Watson IoT Platform
Sign in
Collect data from
Buildings
and make value from it
Learn More
Cookie Preferences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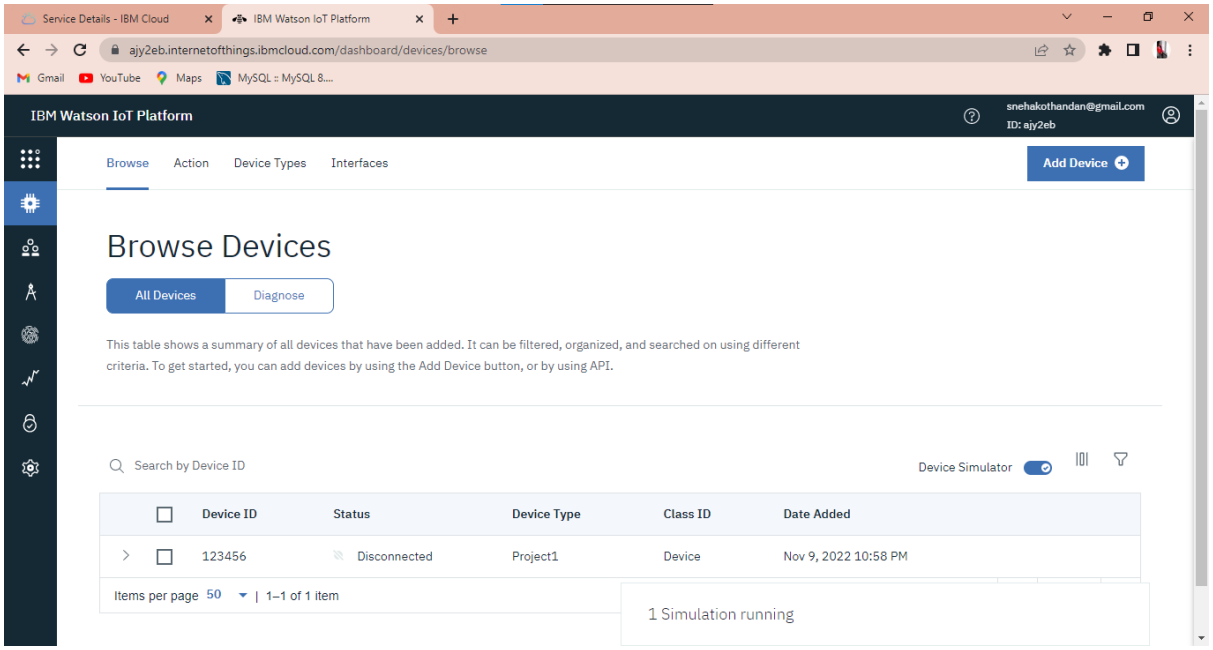
IBM Watson IoT Platform
snehakothandan@gmail.c...
ID: (select org)
Collect data from
Cars
and make value from it
Learn More
Cookie Preferences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ajy2eb.internetofthings.ibmcloud.com/dashboard/devices/browse
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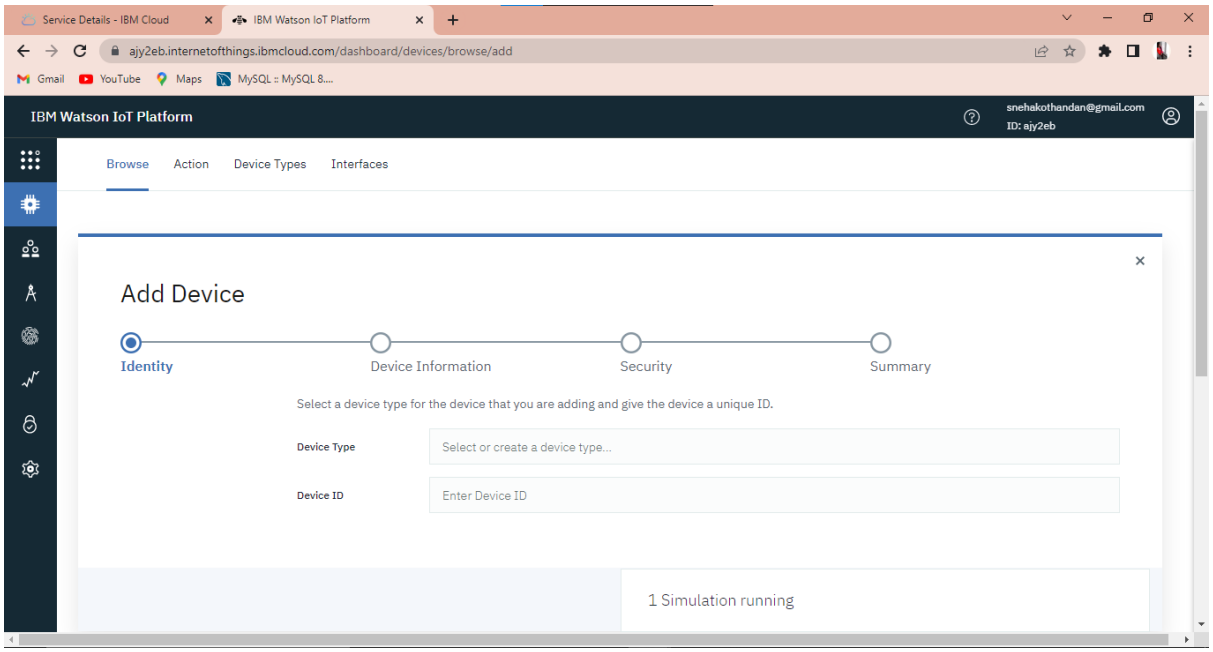
YouTube
Maps
MySQL :: MySQL 8....
IBM Watson IoT Platform
snehakothandan@gmail.com
ID: ajy2eb
Browse
Action
Device Types
Interfaces
Add Device
Browse Devices
All Devices
Diagnose
This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.
Search by Device ID
Device Simulator
Device ID
Status
Device Type
Class ID
Date Added
123456
Disconnected
Project1
Device
Nov 9, 2022 10:58 PM
Items per page 50
1–1 of 1 item
1 Simulation running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Maps
MySQL :: MySQL 8....
IBM Watson IoT Platform
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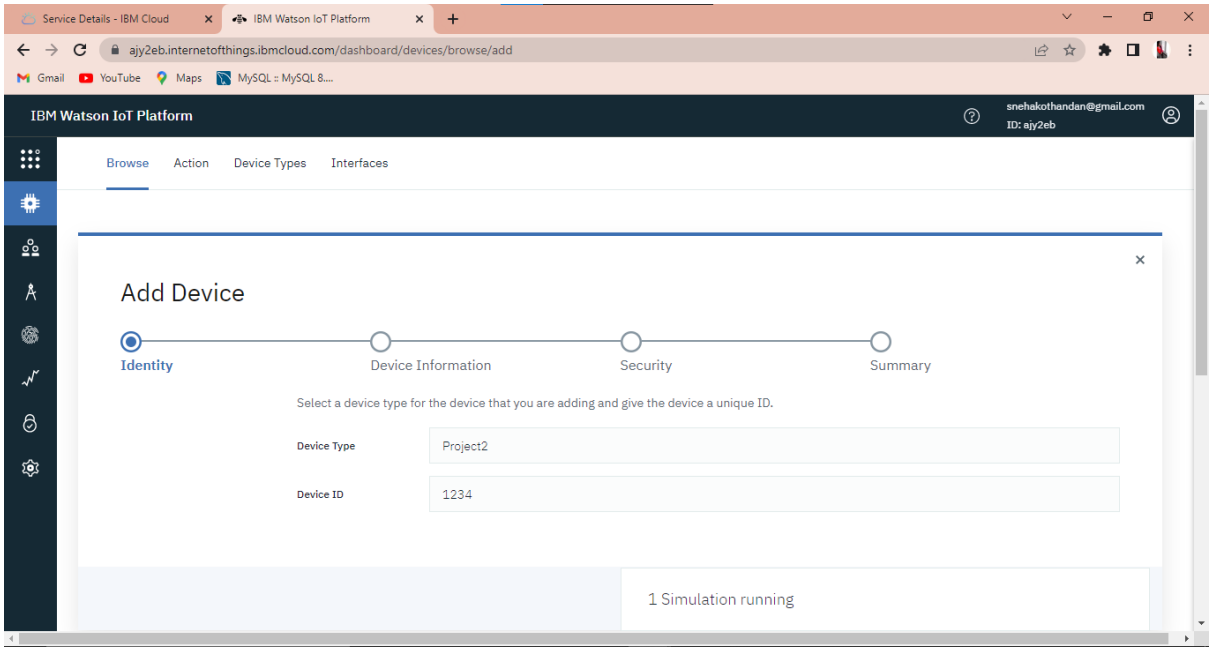
ID: ajy2eb
Browse
Action
Device Types
Interfaces
Add Device
Identity
Device Information
Security
Summary
Select a device type for the device that you are adding and give the device a unique ID.
Device Type
Select or create a device type...
Device ID
Enter Device ID
1 Simulation running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YouTube
Maps
MySQL :: MySQL 8....
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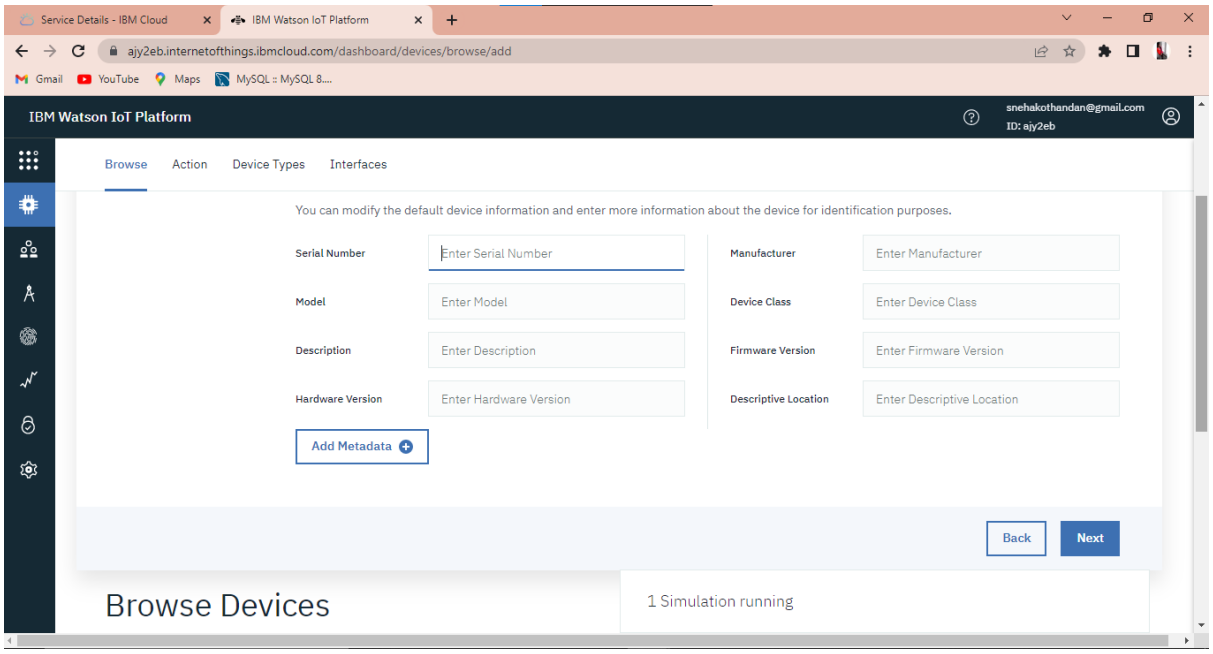
snehakothandan@gmail.com
ID: ajy2eb
Browse
Action
Device Types
Interfaces
Add Device
Identity
Device Information
Security
Summary
Select a device type for the device that you are adding and give the device a unique ID.
Device Type
Project2
Device ID
1234
1 Simulation running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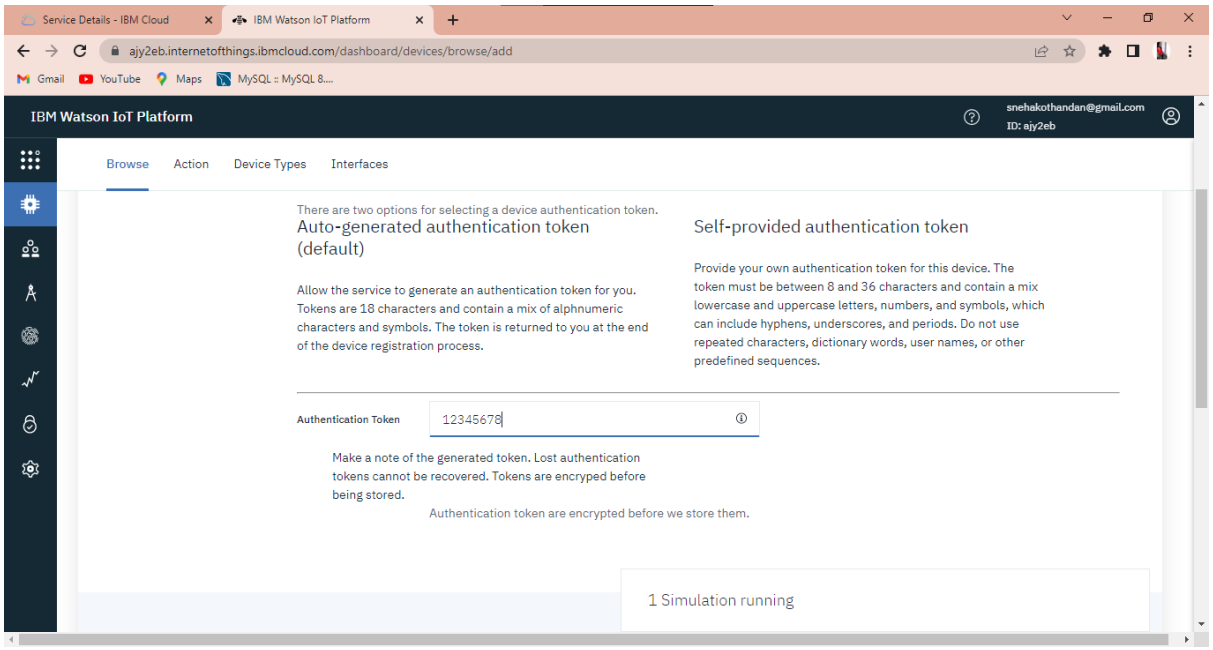
Browse
Action
Device Types
Interfaces
You can modify the default device information and enter more information about the device for identification purposes.
Serial Number
Enter Serial Number
Manufacturer
Enter Manufacturer
Model
Enter Model
Device Class
Enter Device Class
Description
Enter Description
Firmware Version
Enter Firmware Version
Hardware Version
Enter Hardware Version
Descriptive Location
Enter Descriptive Location
Add Metadata
Back
Next
Browse Devices
1 Simulation running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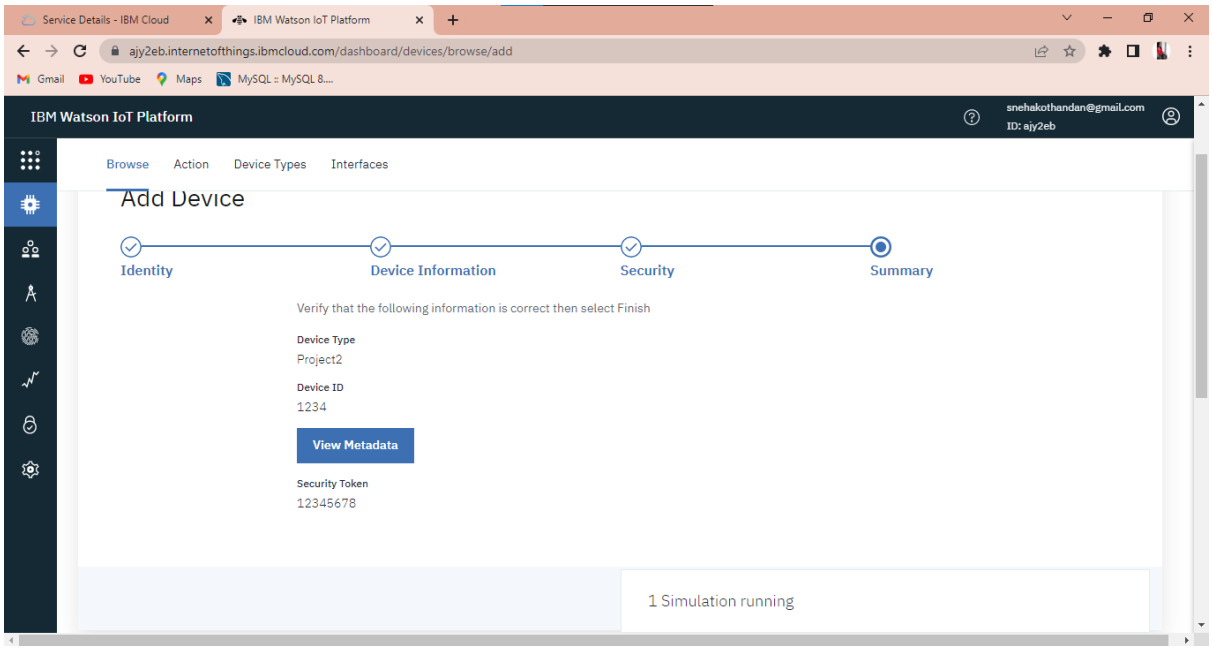
Browse
Action
Device Types
Interfaces
There are two options for selecting a device authentication token.
Auto-generated authentication token (default)
Allow the service to generate an authentication token for you. Tokens are 18 characters and contain a mix of alphnumeric characters and symbols. The token is returned to you at the end of the device registration process.
Self-provided authentication token
Provide your own authentication token for this device. The token must be between 8 and 36 characters and contain a mix lowercase and uppercase letters, numbers, and symbols, which can include hyphens, underscores, and periods. Do not use repeated characters, dictionary words, user names, or other predefined sequences.
Authentication Token
12345678
Make a note of the generated token. Lost authentication tokens cannot be recovered. Tokens are encryped before being stored.
Authentication token are encrypted before we store them.
1 Simulation running


Service Details - IBM Cloud
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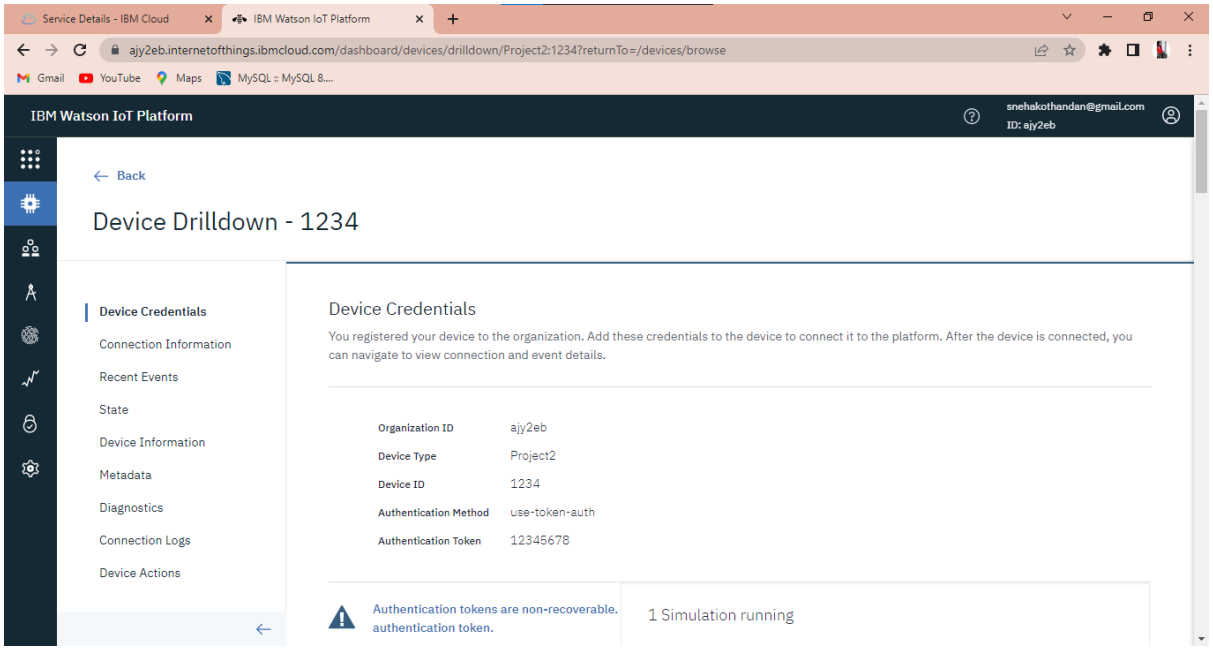
IBM Watson IoT Platform
snehakothandan@gmail.com
ID: ajy2eb
Browse
Action
Device Types
Interfaces
Add Device
Identity
Device Information
Security
Summary
Verify that the following information is correct then select Finish
Device Type
Project2
Device ID
1234
View Metadata
Security Token
12345678
1 Simulation running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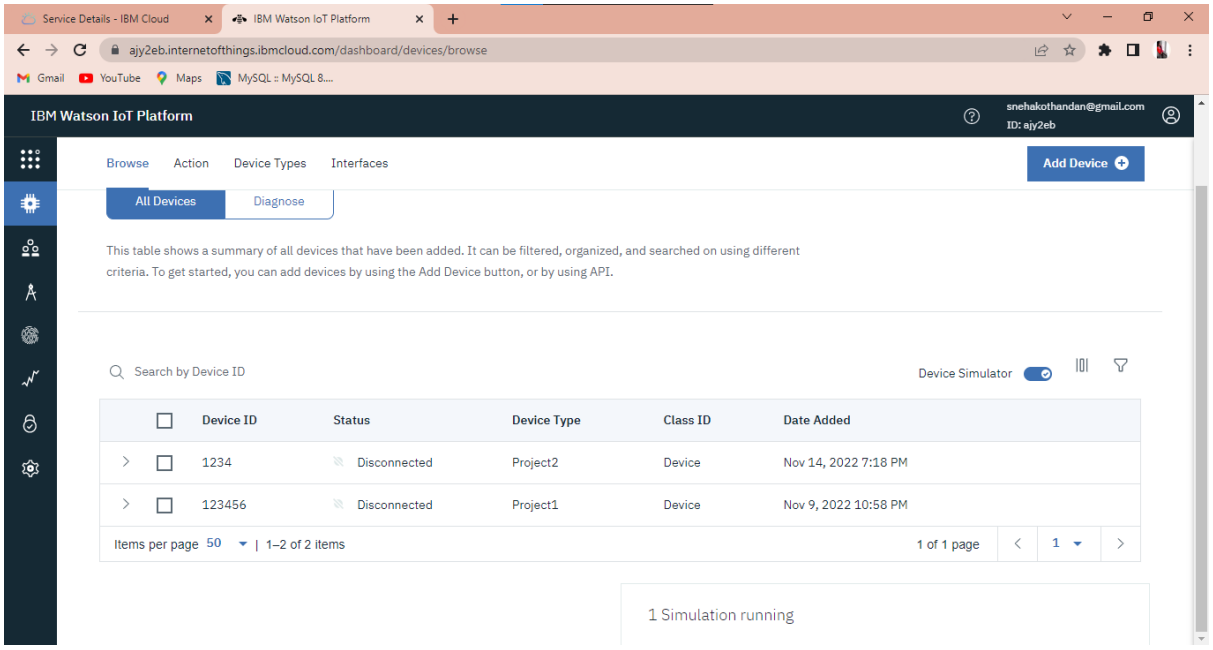
IBM Watson IoT Platform
ajy2eb.internetofthings.ibmcloud.com/dashboard/devices/drilldown/Project2:1234?returnTo=/devices/browse
IBM Watson IoT Platform
snehakothandan@gmail.com
ID: ajy2eb
Back
Device Drilldown - 1234
Device Credentials
Connection Information
Recent Events
State
Device Information
Metadata
Diagnostics
Connection Logs
Device Actions
Device Credentials
You registered your device to the organization. Add these credentials to the device to connect it to the platform. After the device is connected, you can navigate to view connection and event details.
Organization ID
ajy2eb
Device Type
Project2
Device ID
1234
Authentication Method
use-token-auth
Authentication Token
12345678
Authentication tokens are non-recoverable.
authentication token.
1 Simulation running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IBM Watson IoT Platform
snehakothandan@gmail.com
ID: ajy2eb
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All Devices
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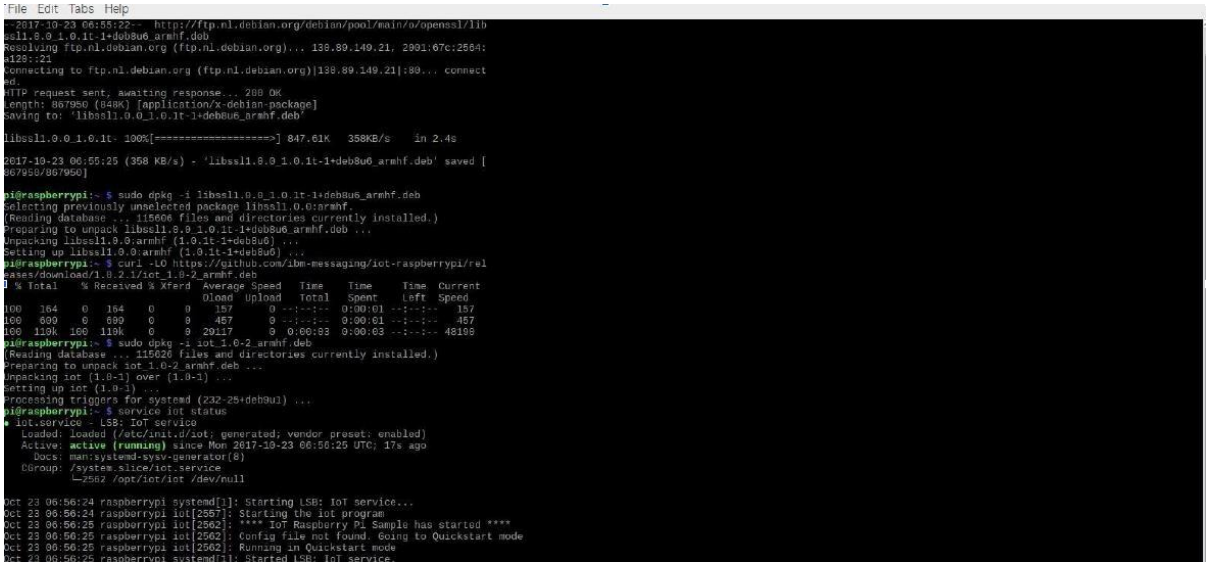
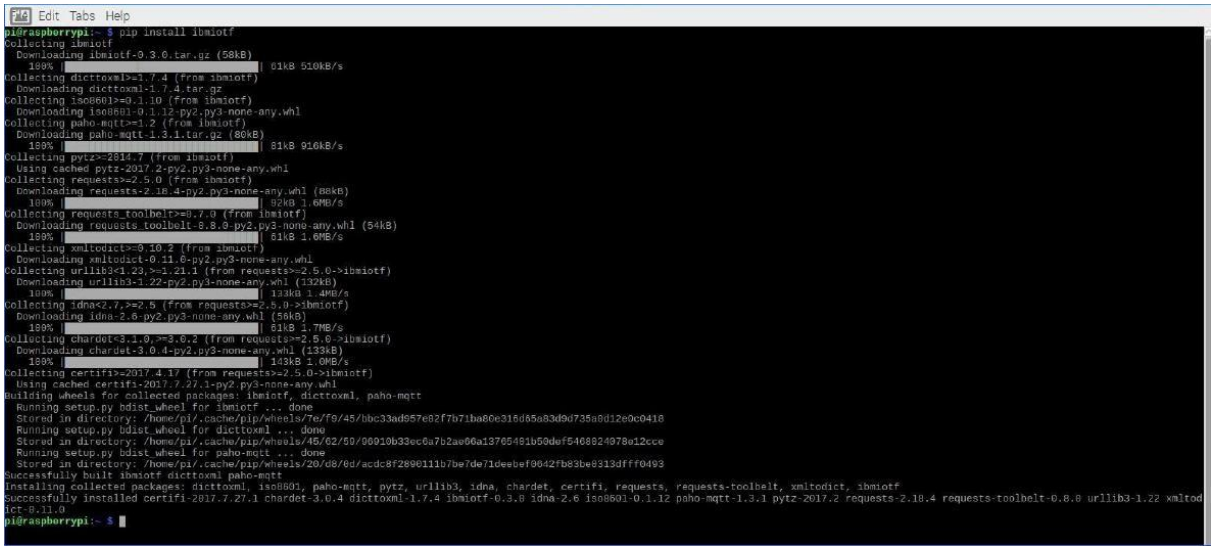
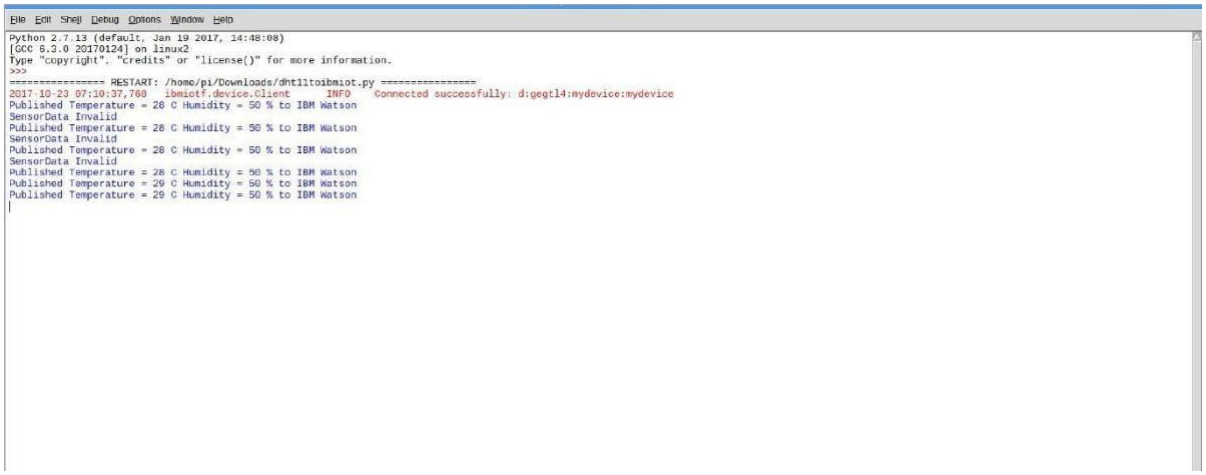
Search by Device ID
Device Simulator
Device ID
Status
Device Type
Class ID
Date Added
1234
Disconnected
Project2
Device
Nov 14, 2022 7:18 PM
123456
Disconnected
Project1
Device
Nov 9, 2022 10:58 PM
Items per page 50
1–2 of 2 items
1 of 1 page
1
1 Simulation running

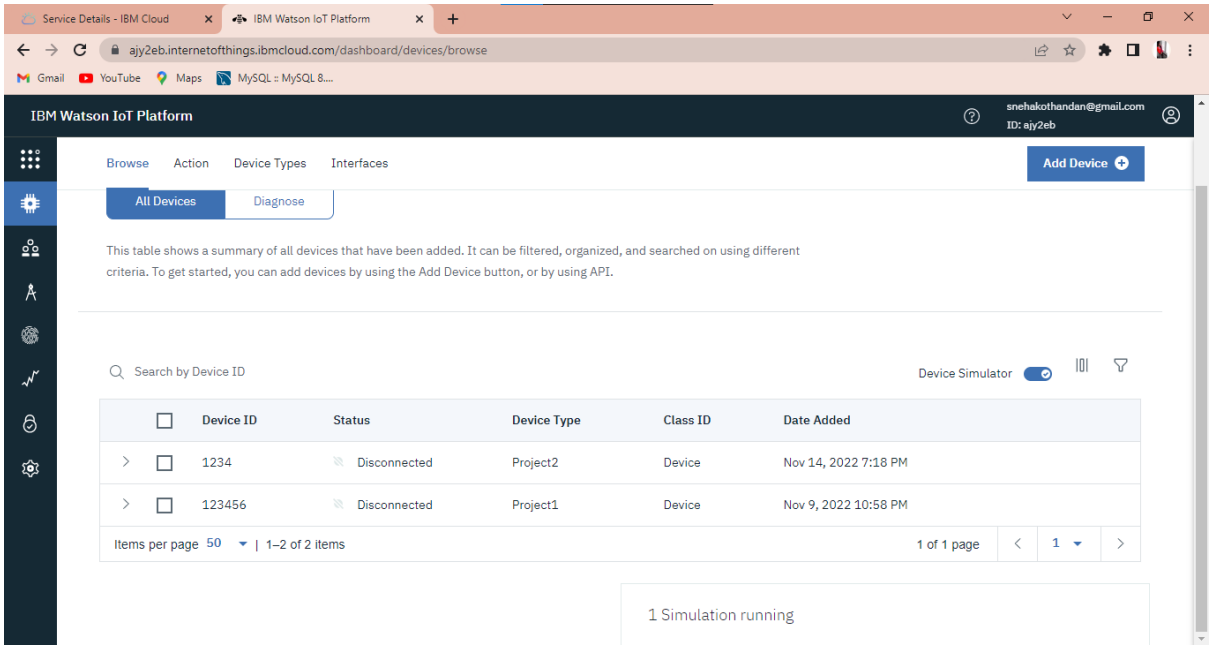
- Install necessary package on the Raspberry pi

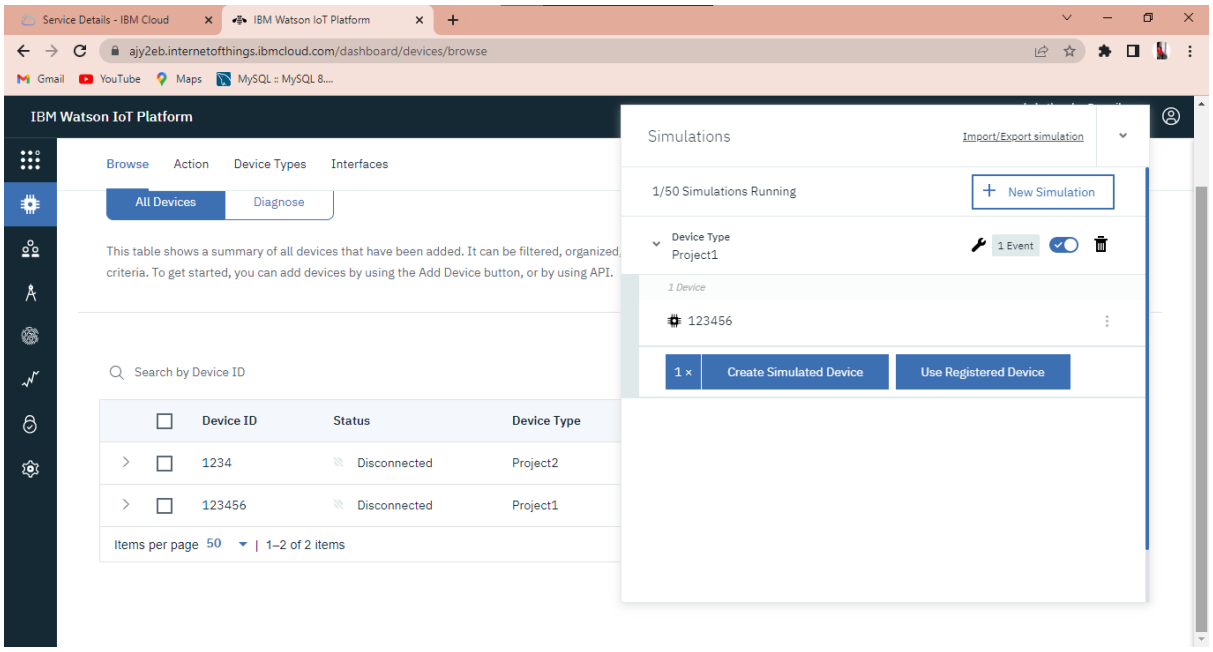






- Check for the Data to be sent to IBM Bluemix

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IBM Watson IoT Platform
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IBM Watson IoT Platform
Browse
Action
Device Types
Interfaces
All Devices
Diagnose
This table shows a summary of all devices that have been added. It can be filtered, organized
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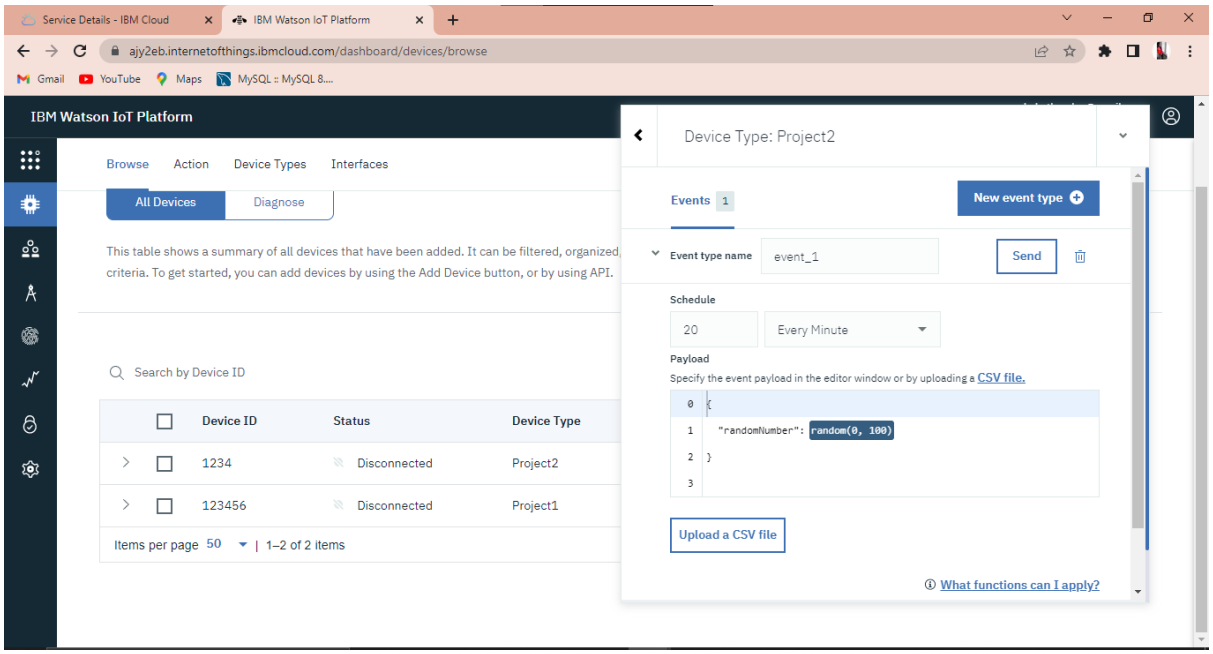
Search by Device ID
Device ID
Status
Device Type
1234
Disconnected
Project2
123456
Disconnected
Project1
Items per page 50
1–2 of 2 items
Simulations
Import/Export simulation
1/50 Simulations Running
New Simulation
Device Type
Project1
1 Event
1 Device
123456
1 ×
Create Simulated Device
Use Registered Device


Service Details - IBM Cloud
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IBM Watson IoT Platform
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Action
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Interfaces
All Devices
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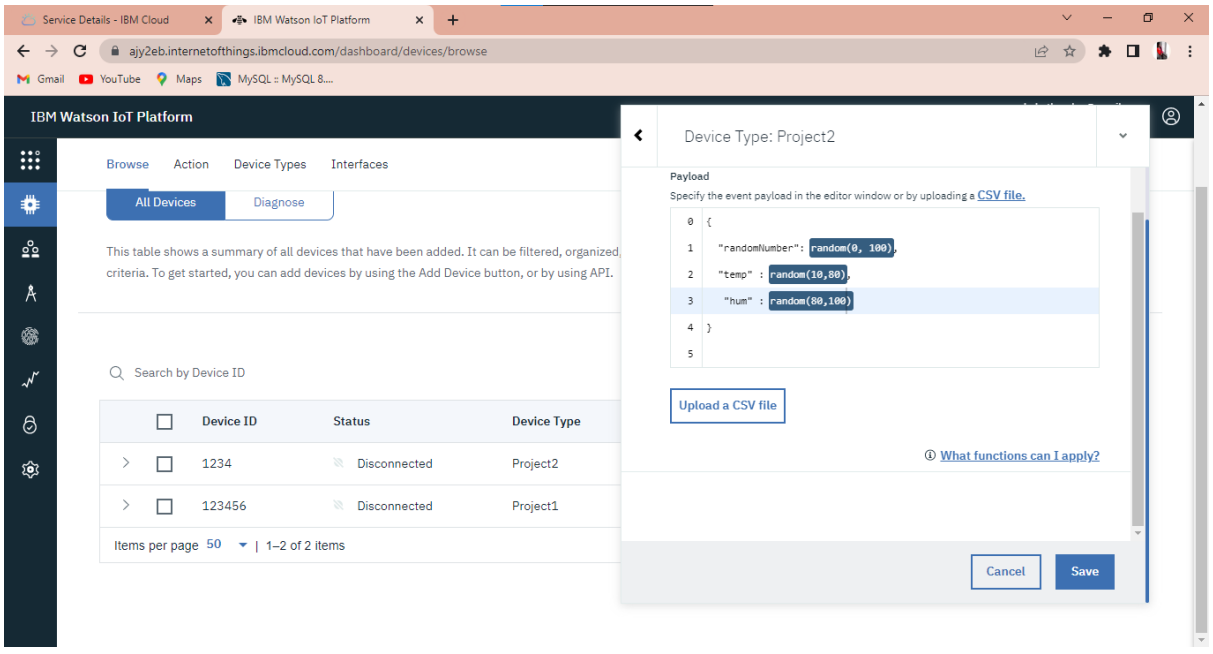
Search by Device ID
Device ID
Status
Device Type
1234
Disconnected
Project2
123456
Disconnected
Project1
Items per page 50
1–2 of 2 items
Device Type: Project2
Events 1
New event type
Event type name
event_1
Send
Schedule
20
Every Minute
Payload
Specify the event payload in the editor window or by uploading a CSV file.
{
"randomNumber": random(0, 100)
}
Upload a CSV file
What functions can I apply?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IBM Watson IoT Platform
Browse
Action
Device Types
Interfaces
All Devices
Diagnose
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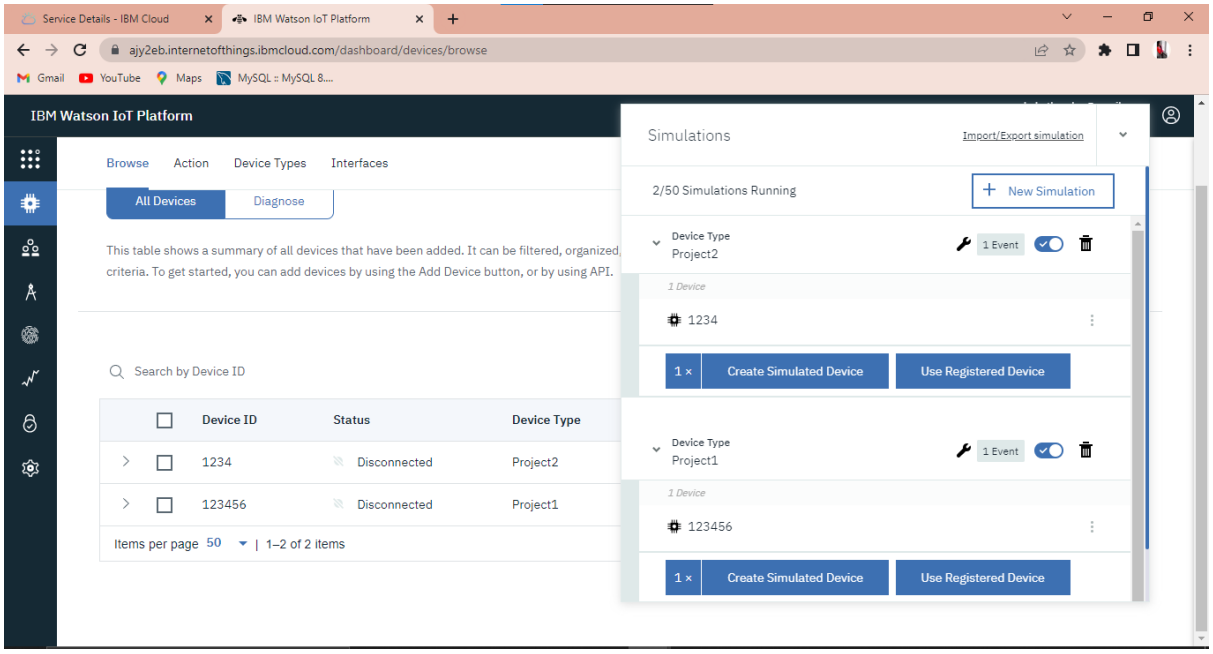
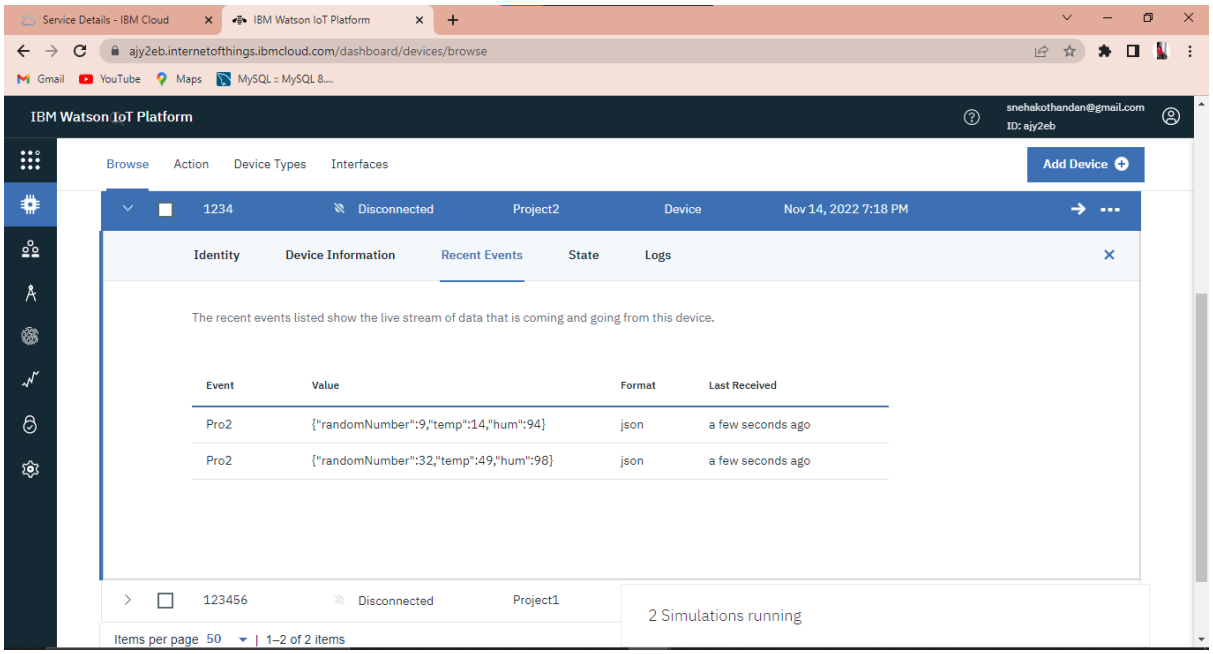
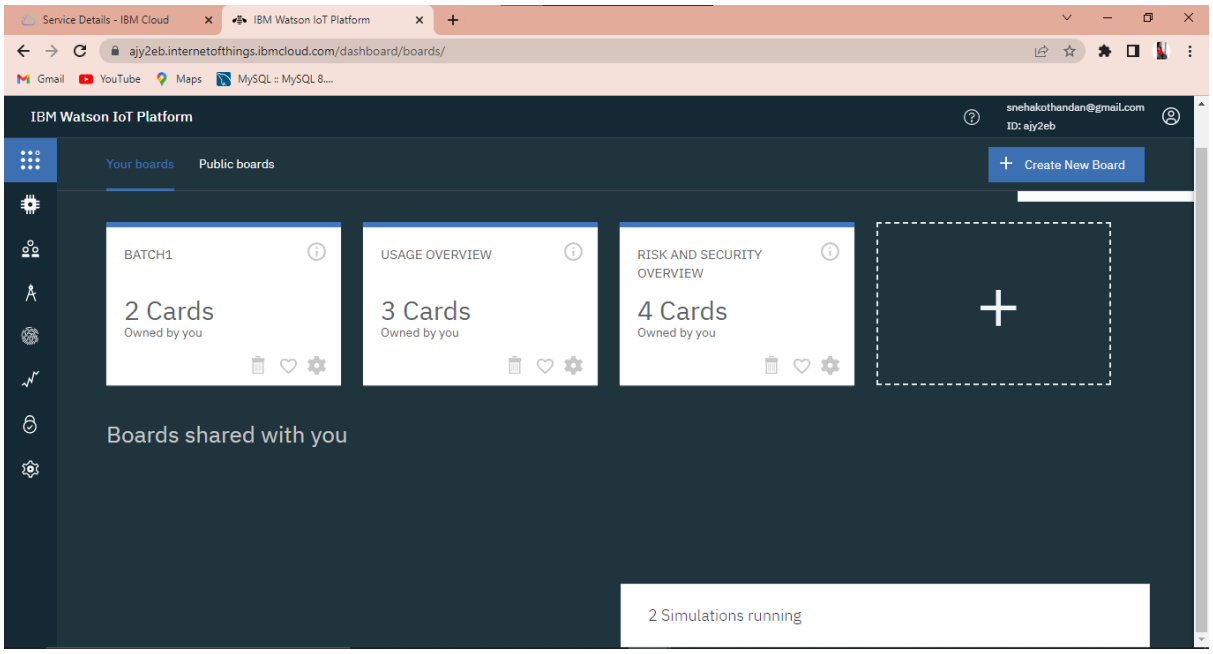
Search by Device ID
Device ID
Status
Device Type
1234
Disconnected
Project2
123456
Disconnected
Project1
Items per page 50
1–2 of 2 items
Device Type: Project2
Payload
Specify the event payload in the editor window or by uploading a CSV file.
{
"randomNumber": random(0, 100),
"temp" : random(10,80),
"hum" : random(80,100)
}
Upload a CSV file
What functions can I apply?
Cancel
Save





- Create boards and cards for visualization


Service Details - IBM Cloud
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Gmail
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Maps
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IBM Watson IoT Platform
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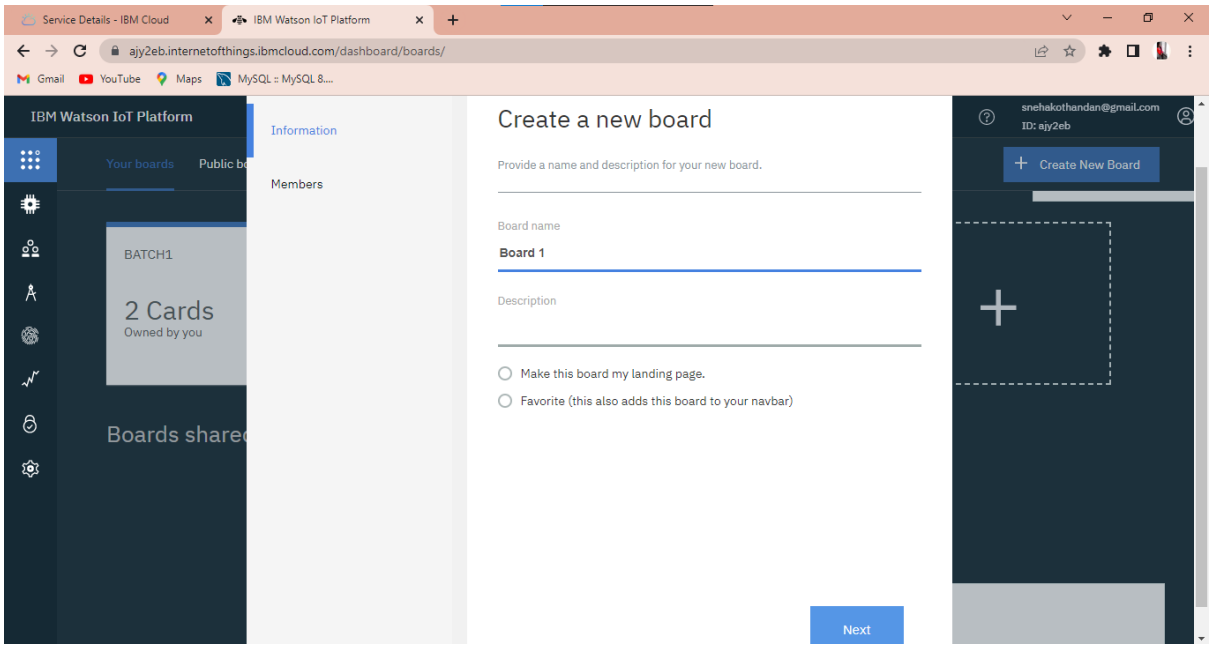
ID: ajy2eb
Your boards
Public boards
Create New Board
BATCH1
2 Cards
Owned by you
USAGE OVERVIEW
3 Cards
Owned by you
RISK AND SECURITY OVERVIEW
4 Cards
Owned by you
Boards shared with you
2 Simulations running


Service Details - IBM Cloud
IBM Watson IoT Platform
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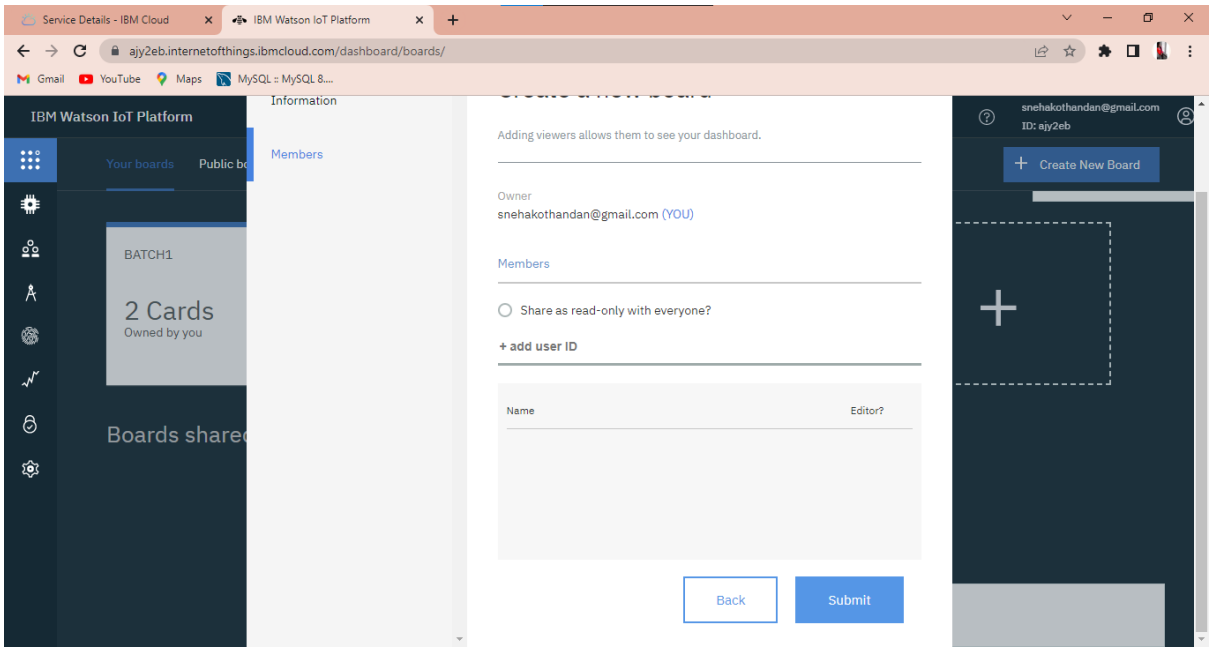
Gmail
YouTube
Maps
MySQL :: MySQL 8....
IBM Watson IoT Platform
Information
Members
Create a new board
Provide a name and description for your new board.
Board name
Board 1
Description
Make this board my landing page.
Favorite (this also adds this board to your navbar)
Next
snehakothandan@gmail.com
ID: ajy2eb
Create New Board
BATCH1
2 Cards
Owned by you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Information
Members
Your boards
Public bo
BATCH1
2 Cards
Owned by you
Boards share
Adding viewers allows them to see your dashboard.
Owner
snehakothandan@gmail.com (YOU)
Members
Share as read-only with everyone?
+ add user ID
Name
Editor?
Back
Submit
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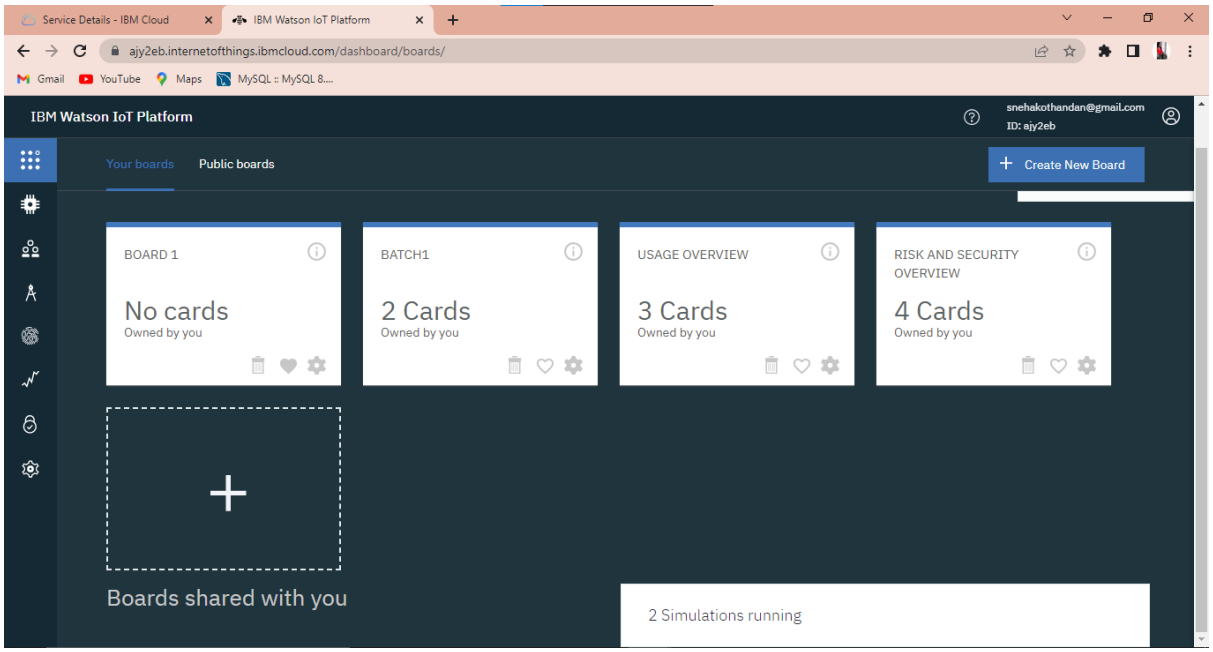
ID: ajy2eb
Create New Board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IBM Watson IoT Platform
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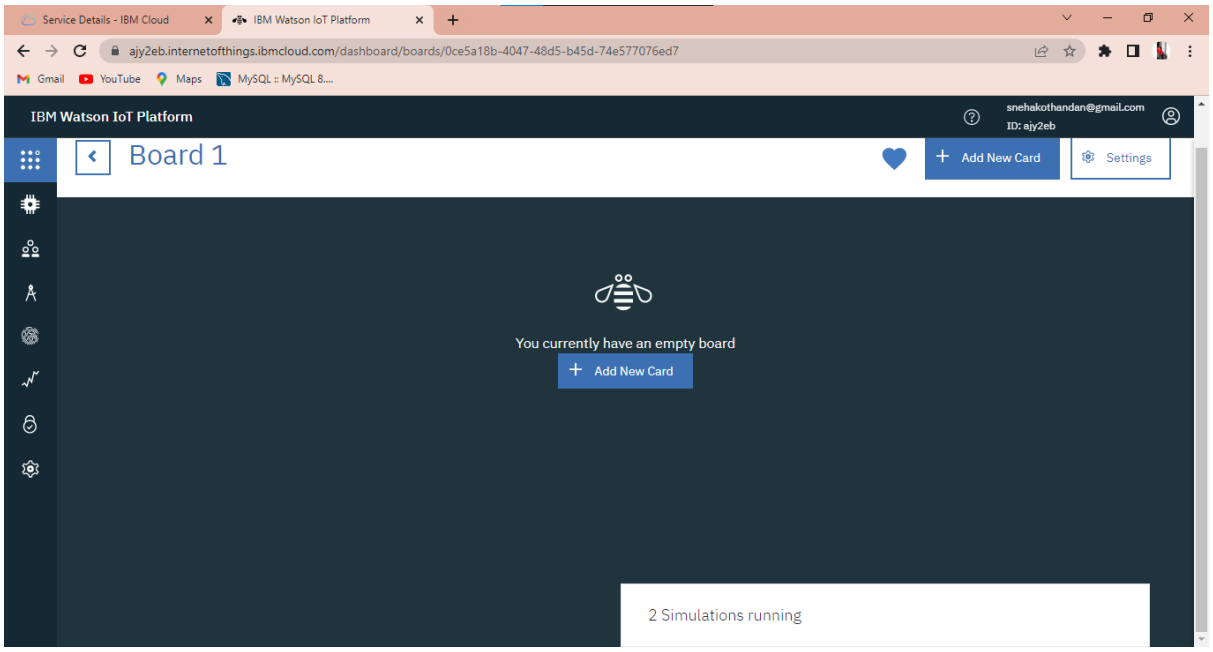
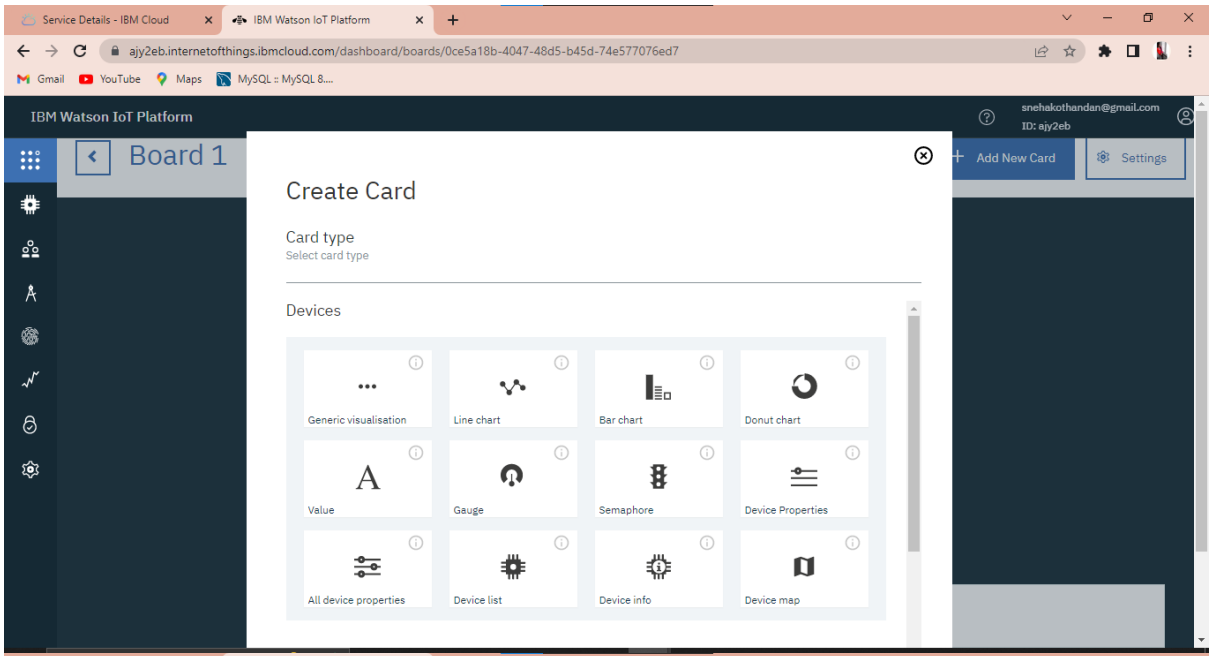
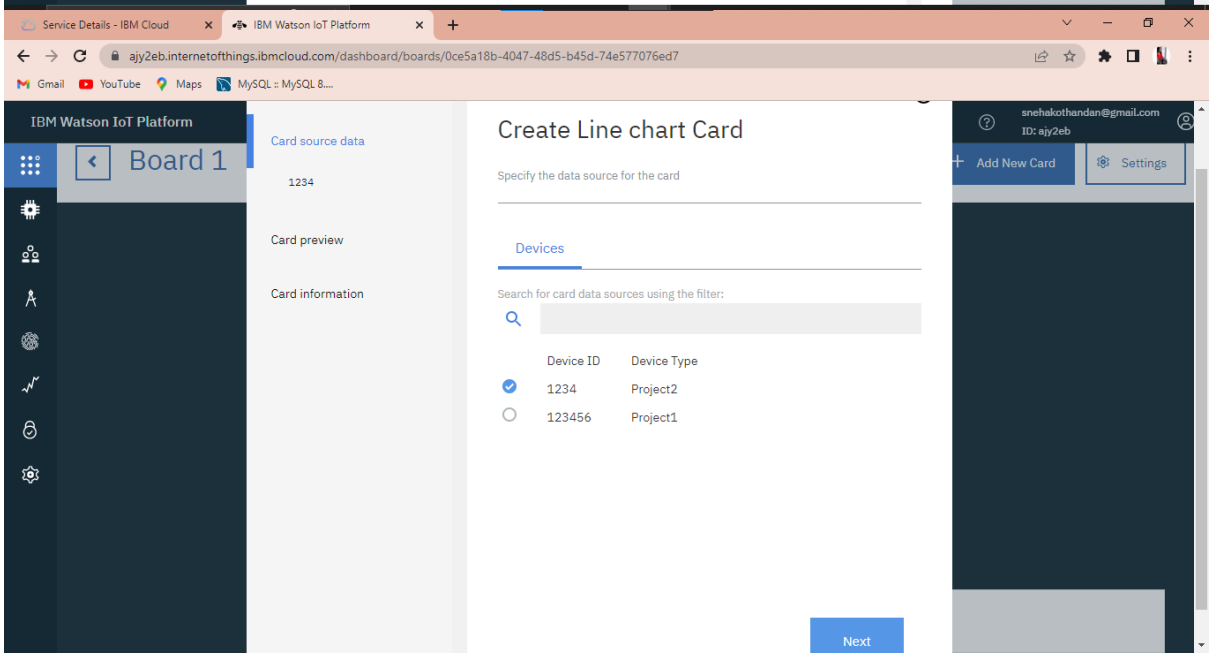
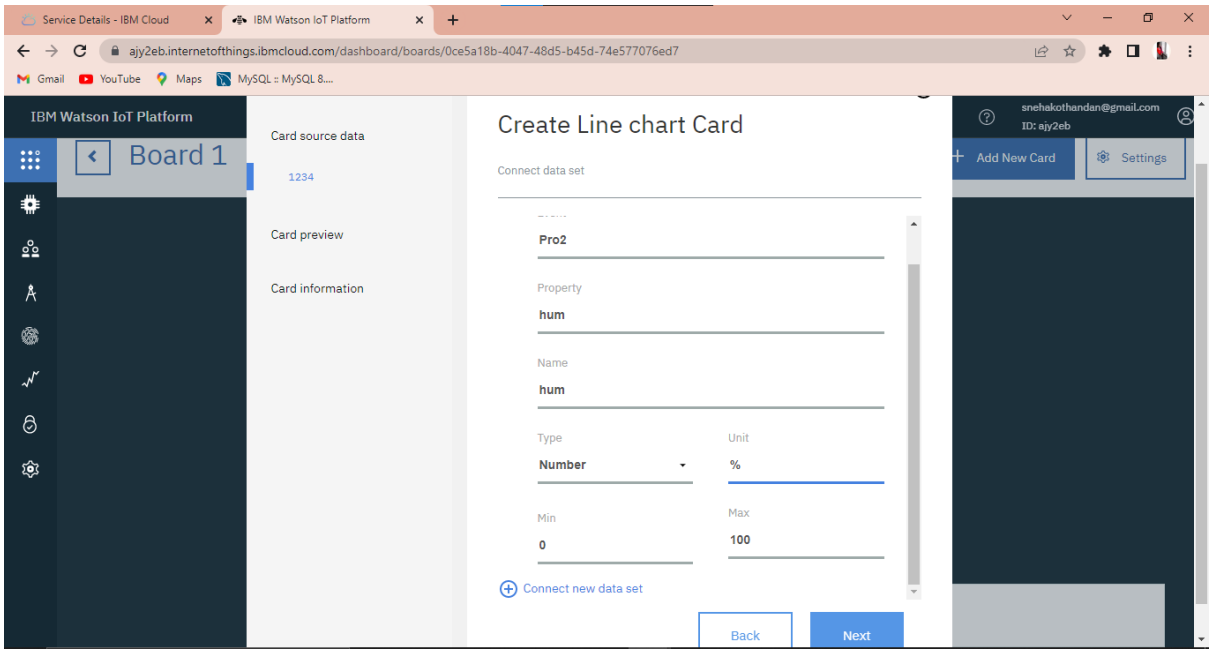
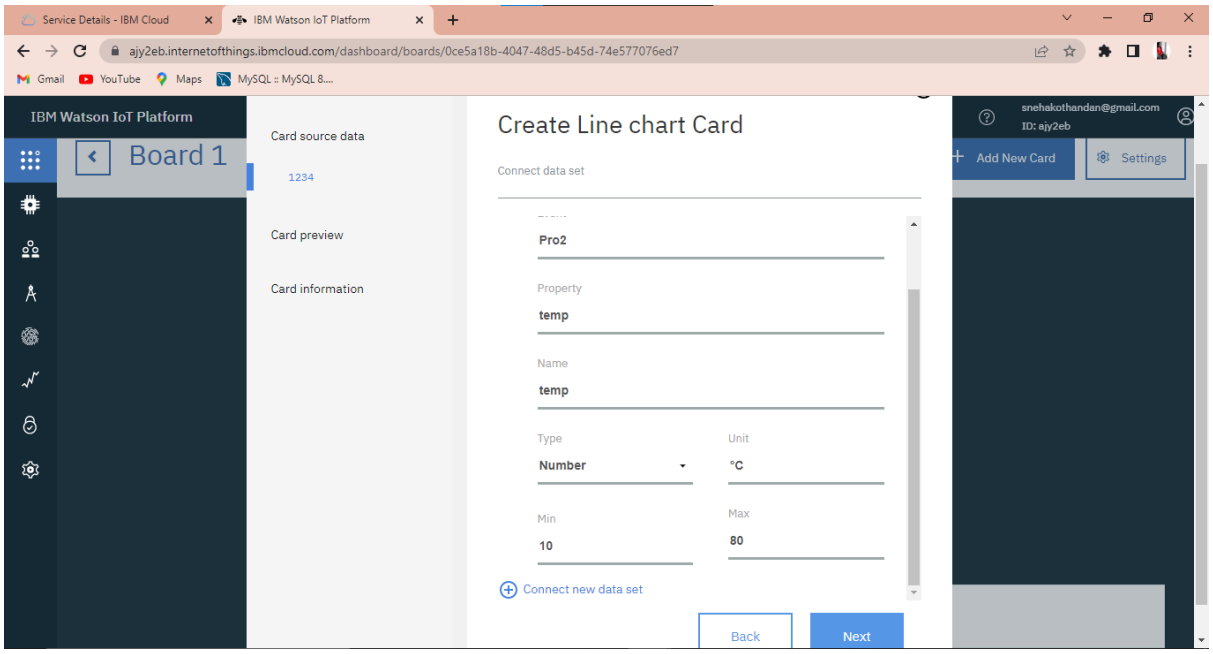
Your boards
Public boards
Create New Board
BOARD 1
No cards
Owned by you
BATCH1
2 Cards
Owned by you
USAGE OVERVIEW
3 Cards
Owned by you
RISK AND SECURITY OVERVIEW
4 Cards
Owned by you
Boards shared with you
2 Simulations running

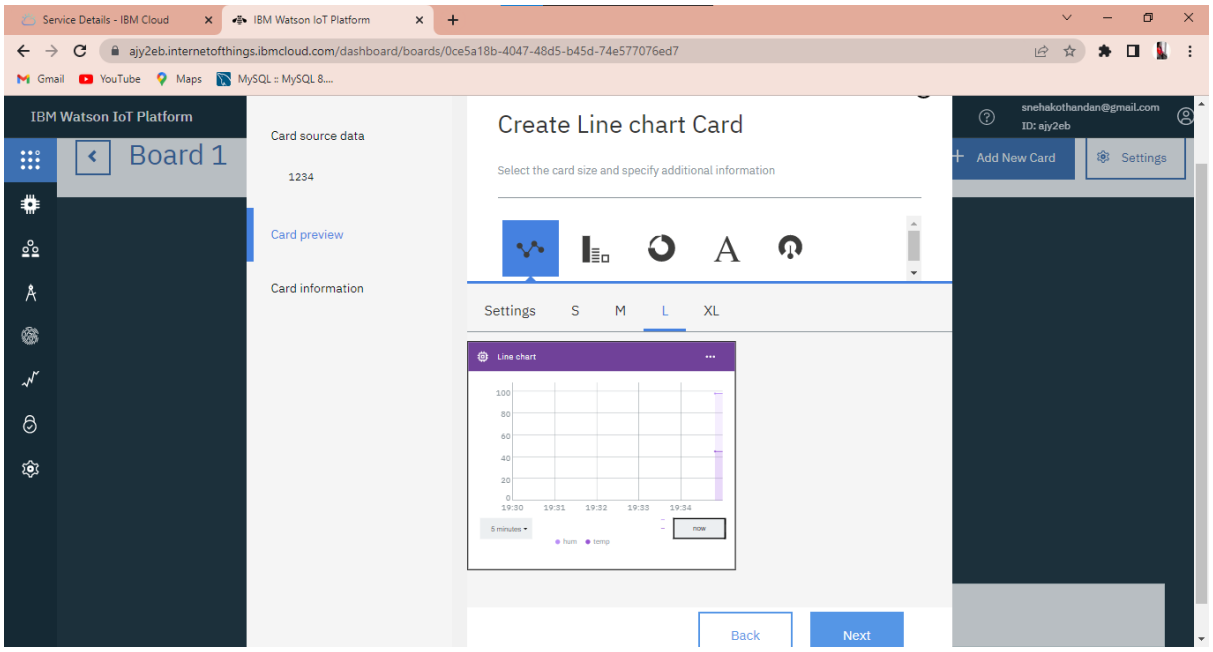

Service Details - IBM Cloud
IBM Watson IoT Platform
ajy2eb.internetofthings.ibmcloud.com/dashboard/boards/0ce5a18b-4047-48d5-b45d-74e577076ed7
Gmail
YouTube
Maps
MySQL :: MySQL 8....
IBM Watson IoT Platform
snehakothandan@gmail.com
ID: ajy2eb
Board 1
Add New Card
Settings
You currently have an empty board
Add New Card
2 Simulations running

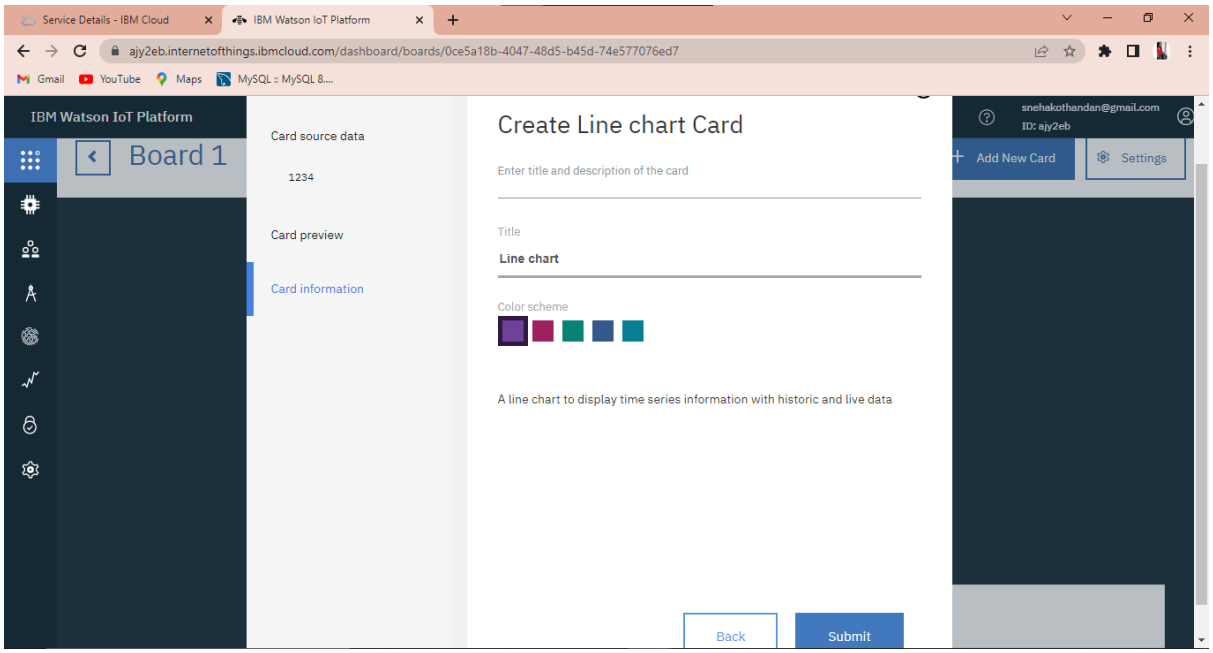

Service Details - IBM Cloud
IBM Watson IoT Platform
ajy2eb.internetofthings.ibmcloud.com/dashboard/boards/0ce5a18b-4047-48d5-b45d-74e577076ed7
Gmail
YouTube
Maps
MySQL :: MySQL 8....
IBM Watson IoT Platform
snehakothandan@gmail.com
ID: ajy2eb
Board 1
Add New Card
Settings
Create Card
Card type
Select card type
Devices
Generic visualisation
Line chart
Bar chart
Donut chart
Value
Gauge
Semaphore
Device Properties
All device properties
Device list
Device info
Device map

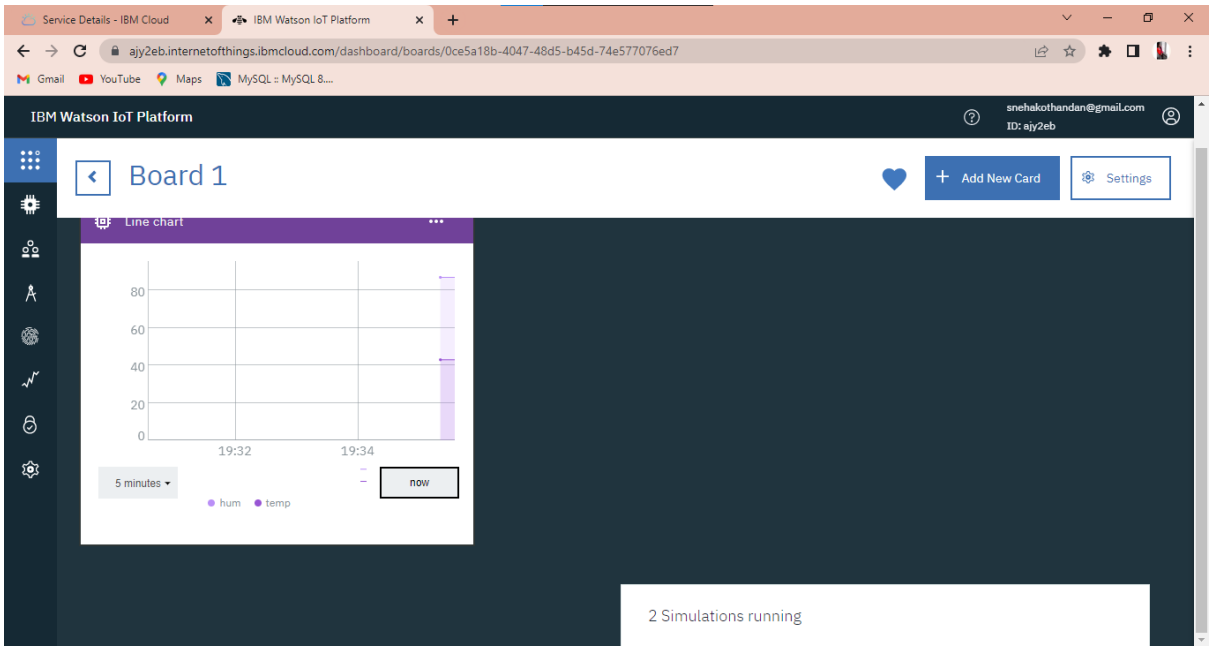

Service Details - IBM Cloud
IBM Watson IoT Platform
ajy2eb.internetofthings.ibmcloud.com/dashboard/boards/0ce5a18b-4047-48d5-b45d-74e577076ed7
Gmail
YouTube
Maps
MySQL :: MySQL 8....
IBM Watson IoT Platform
snehakothandan@gmail.com
ID: ajy2eb
Board 1
Add New Card
Settings
Card source data
1234
Card preview
Card information
Create Line chart Card
Specify the data source for the card
Devices
Search for card data sources using the filter:
Device ID
Device Type
1234
Project2
123456
Project1
Next

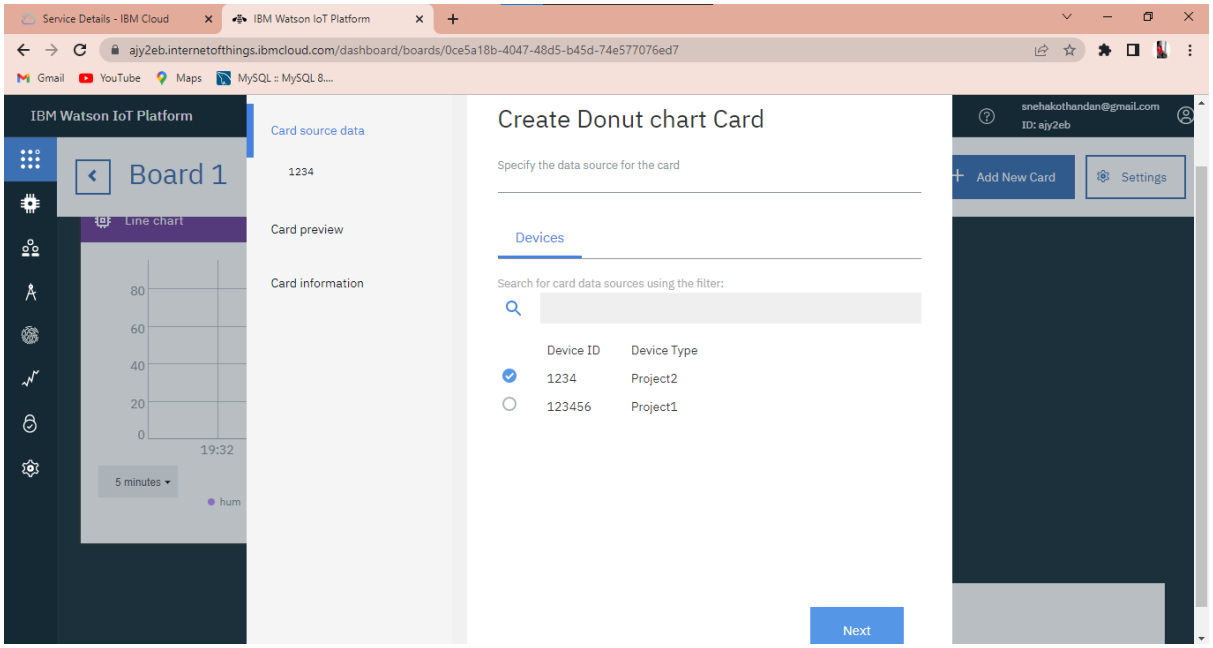

Service Details - IBM Cloud
IBM Watson IoT Platform
ajy2eb.internetofthings.ibmcloud.com/dashboard/boards/0ce5a18b-4047-48d5-b45d-74e577076ed7
Gmail
YouTube
Maps
MySQL :: MySQL 8....
IBM Watson IoT Platform
Board 1
Card source data
1234
Card preview
Card information
Create Line chart Card
Connect data set
Pro2
Property
hum
Name
hum
Type
Number
Unit
%
Min
0
Max
100
Connect new data set
Back
Next
snehakothandan@gmail.com
ID: ajy2eb
Add New Card
Settings

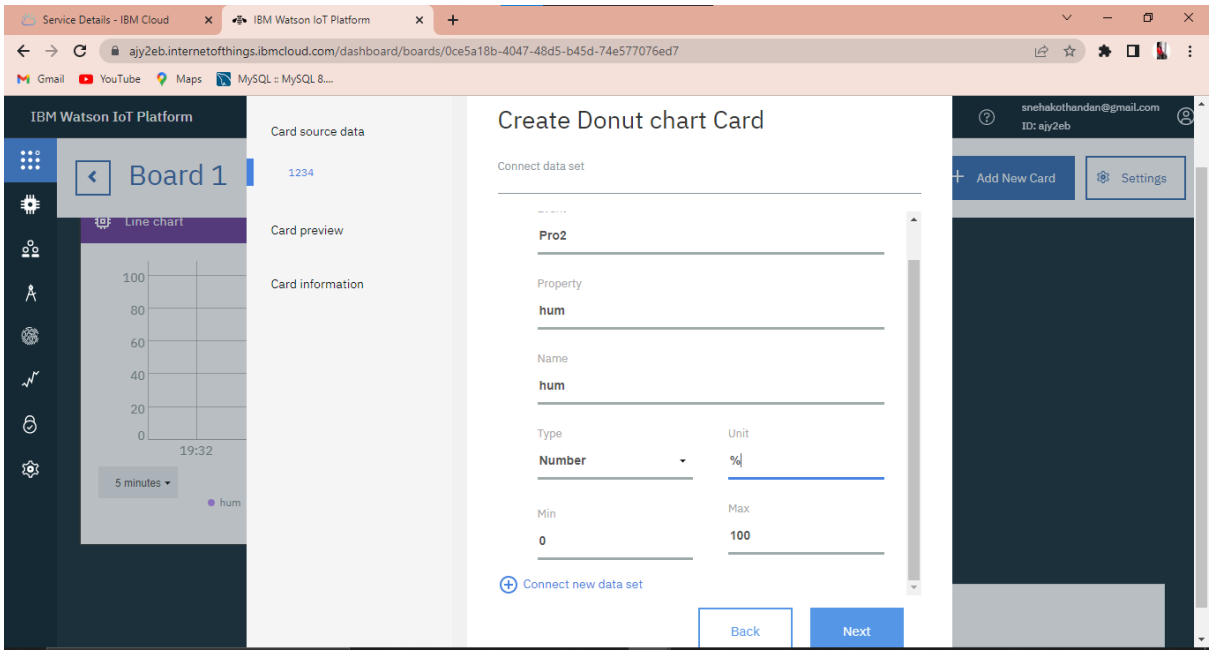

Service Details - IBM Cloud
IBM Watson IoT Platform
ajy2eb.internetofthings.ibmcloud.com/dashboard/boards/0ce5a18b-4047-48d5-b45d-74e577076ed7
Gmail
YouTube
Maps
MySQL :: MySQL 8....
IBM Watson IoT Platform
Board 1
Card source data
1234
Card preview
Card information
Create Line chart Card
Connect data set
Pro2
Property
temp
Name
temp
Type
Number
Unit
°C
Min
10
Max
80
Connect new data set
Back
Next
snehakothandan@gmail.com
ID: ajy2eb
Add New Card
Settings

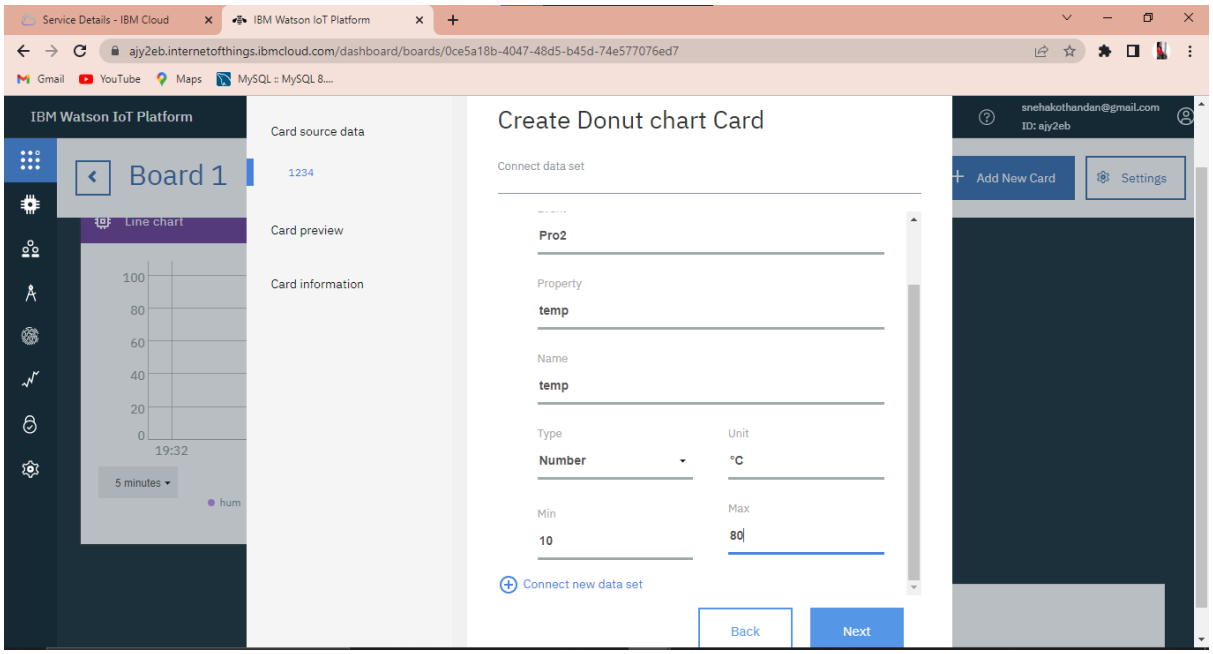

Service Details - IBM Cloud
IBM Watson IoT Platform
ajy2eb.internetofthings.ibmcloud.com/dashboard/boards/0ce5a18b-4047-48d5-b45d-74e577076ed7
IBM Watson IoT Platform
Board 1
Card source data
1234
Card preview
Card information
Create Line chart Card
Select the card size and specify additional information
Settings
S
M
L
XL
Line chart
Back
Next
snehakothandan@gmail.com
ID: ajy2eb
Add New Card
Settings

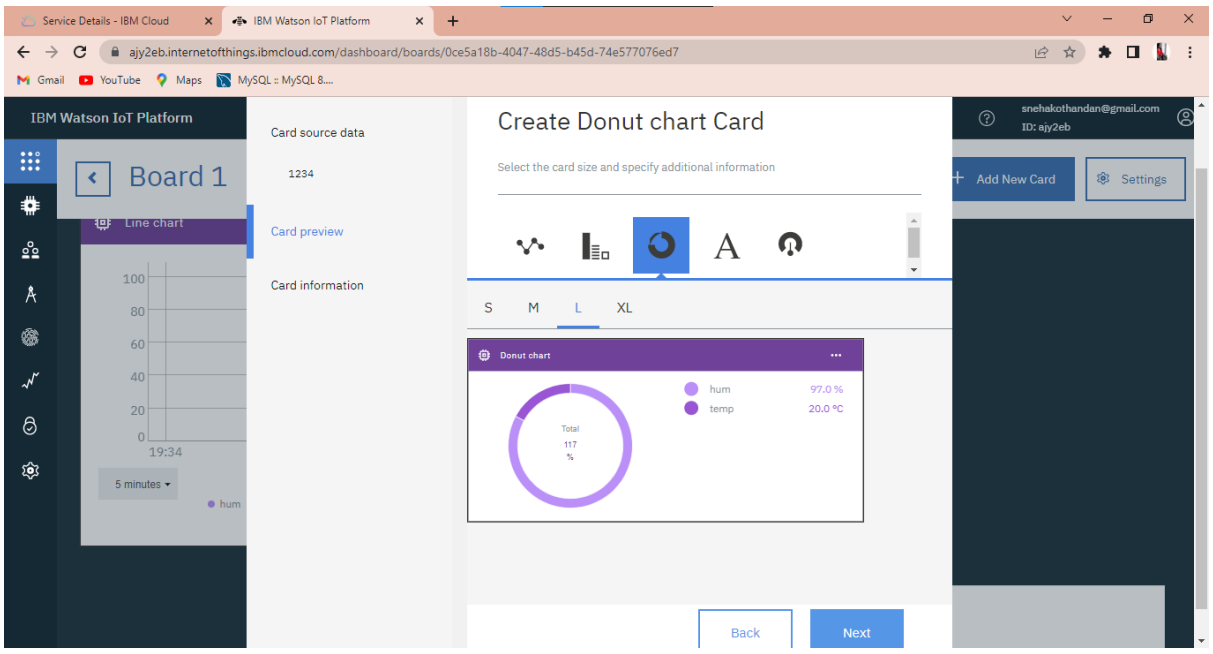

Service Details - IBM Cloud
IBM Watson IoT Platform
ajy2eb.internetofthings.ibmcloud.com/dashboard/boards/0ce5a18b-4047-48d5-b45d-74e577076ed7
IBM Watson IoT Platform
Board 1
Card source data
1234
Card preview
Card information
Create Line chart Card
Enter title and description of the card
Title
Line chart
Color scheme
A line chart to display time series information with historic and live data
Back
Submit
snehakothandan@gmail.com
ID: ajy2eb
Add New Card
Settings

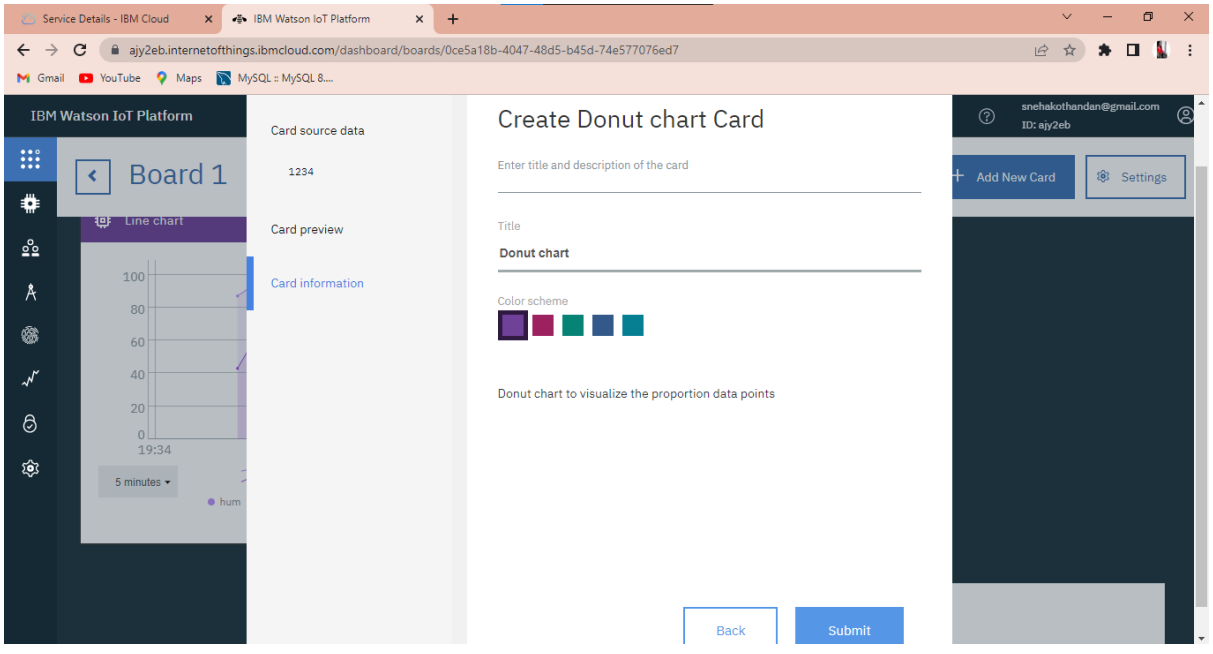

Service Details - IBM Cloud
IBM Watson IoT Platform
ajy2eb.internetofthings.ibmcloud.com/dashboard/boards/0ce5a18b-4047-48d5-b45d-74e577076ed7
IBM Watson IoT Platform
snehakothandan@gmail.com
ID: ajy2eb
Board 1
Add New Card
Settings
Line chart
80
60
40
20
0
19:32
19:34
5 minutes
now
hum
temp
2 Simulations running

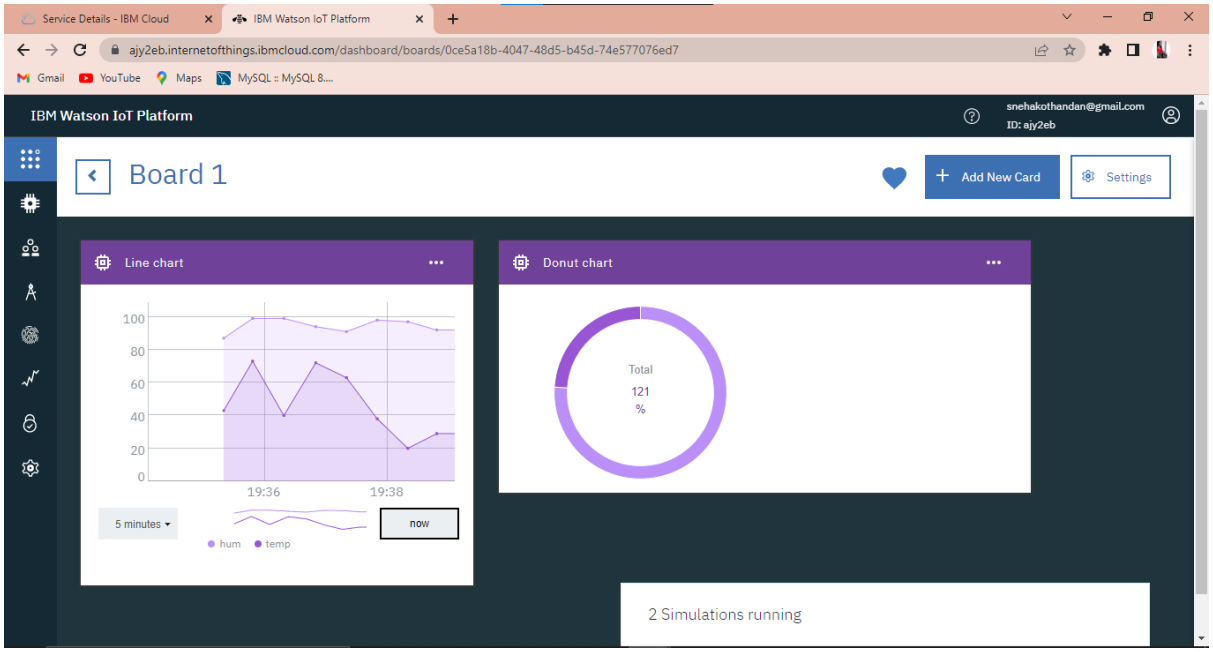

Service Details - IBM Cloud
IBM Watson IoT Platform
ajy2eb.internetofthings.ibmcloud.com/dashboard/boards/0ce5a18b-4047-48d5-b45d-74e577076ed7
Gmail
YouTube
Maps
MySQL :: MySQL 8....
IBM Watson IoT Platform
Board 1
Line chart
80
60
40
20
0
19:32
5 minutes
hum
Card source data
1234
Card preview
Card information
Create Donut chart Card
Specify the data source for the card
Devices
Search for card data sources using the filter:
Device ID
Device Type
1234
Project2
123456
Project1
Next
snehakothandan@gmail.com
ID: ajy2eb
Add New Card
Settings

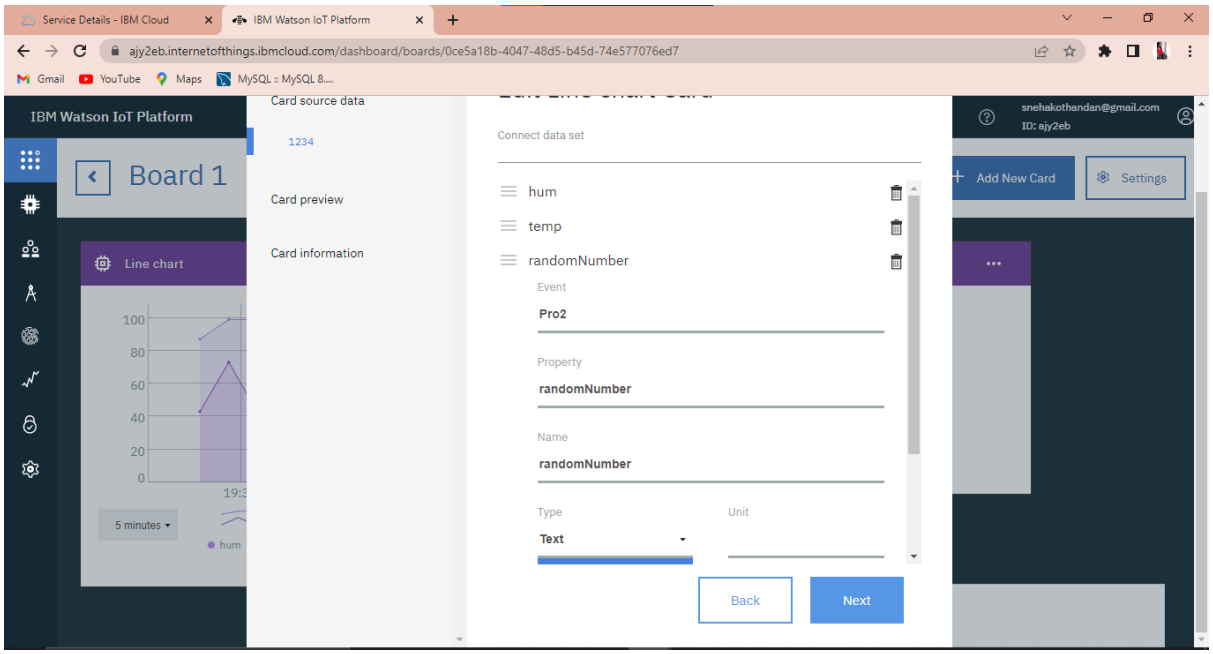

Service Details - IBM Cloud
IBM Watson IoT Platform
ajy2eb.internetofthings.ibmcloud.com/dashboard/boards/0ce5a18b-4047-48d5-b45d-74e577076ed7
Gmail
YouTube
Maps
MySQL :: MySQL 8....
IBM Watson IoT Platform
Board 1
Line chart
100
80
60
40
20
0
19:32
5 minutes
hum
Card source data
1234
Card preview
Card information
Create Donut chart Card
Connect data set
Pro2
Property
hum
Name
hum
Type
Number
Unit
%
Min
0
Max
100
Connect new data set
Back
Next
snehakothandan@gmail.com
ID: ajy2eb
Add New Card
Settings

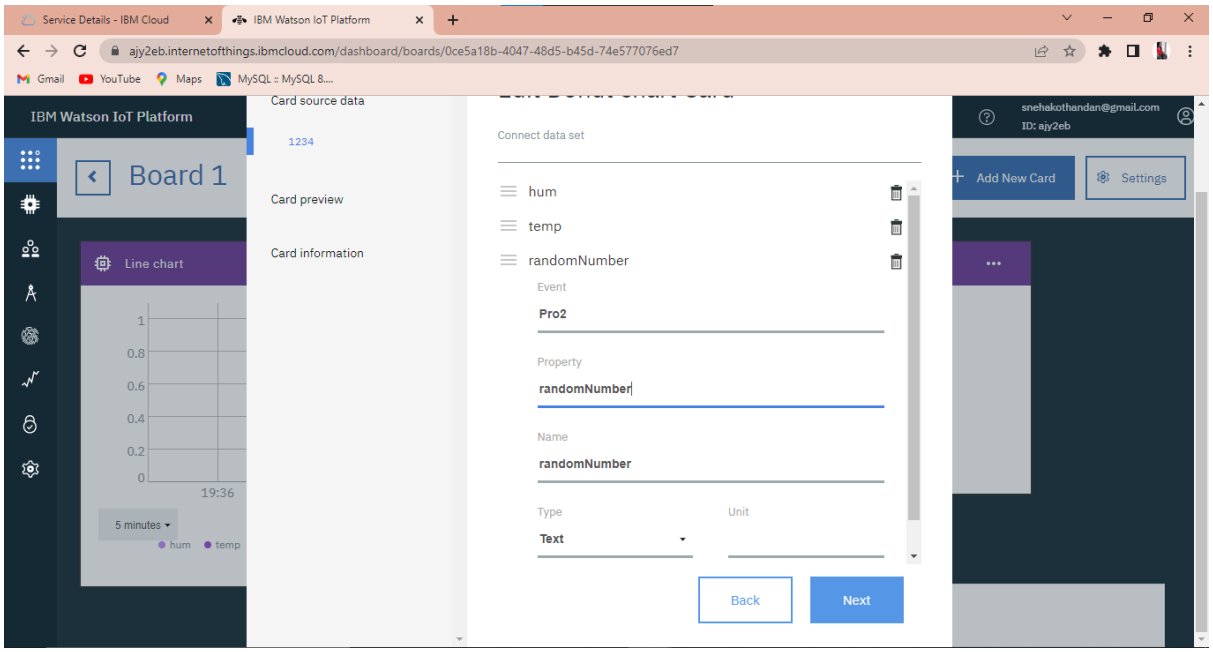

Service Details - IBM Cloud
IBM Watson IoT Platform
ajy2eb.internetofthings.ibmcloud.com/dashboard/boards/0ce5a18b-4047-48d5-b45d-74e577076ed7
IBM Watson IoT Platform
Board 1
Line chart
5 minutes
hum
Card source data
1234
Card preview
Card information
Create Donut chart Card
Connect data set
Pro2
Property
temp
Name
temp
Type
Number
Unit
°C
Min
10
Max
80
Connect new data set
Back
Next
snehakothandan@gmail.com
ID: ajy2eb
Add New Card
Settings

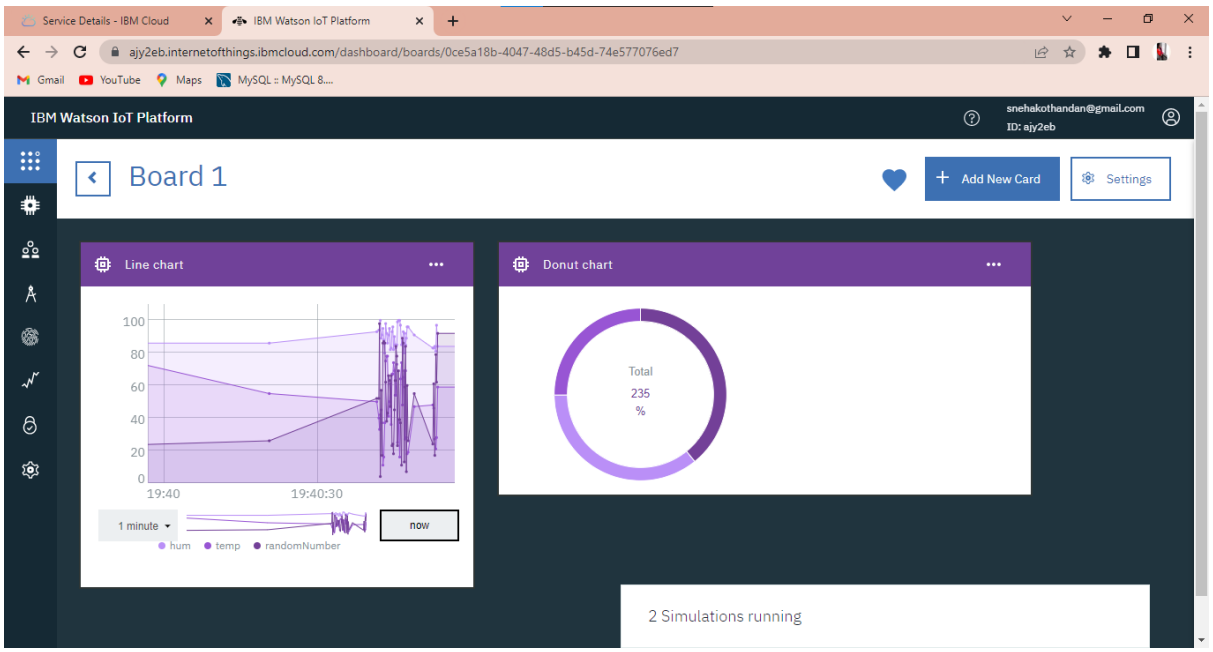

Service Details - IBM Cloud
IBM Watson IoT Platform
ajy2eb.internetofthings.ibmcloud.com/dashboard/boards/0ce5a18b-4047-48d5-b45d-74e577076ed7
IBM Watson IoT Platform
Board 1
Line chart
5 minutes
hum
Card source data
1234
Card preview
Card information
Create Donut chart Card
Select the card size and specify additional information
S
M
L
XL
Donut chart
hum
97.0 %
temp
20.0 °C
Total
117
%
Back
Next
snehakothandan@gmail.com
ID: ajy2eb
Add New Card
Settings


Service Details - IBM Cloud
IBM Watson IoT Platform
ajy2eb.internetofthings.ibmcloud.com/dashboard/boards/0ce5a18b-4047-48d5-b45d-74e577076ed7
IBM Watson IoT Platform
Board 1
Line chart
5 minutes
hum
Card source data
1234
Card preview
Card information
Create Donut chart Card
Enter title and description of the card
Title
Donut chart
Color scheme
Donut chart to visualize the proportion data points
Back
Submit
snehakothandan@gmail.com
ID: ajy2eb
Add New Card
Settings


Service Details - IBM Cloud
IBM Watson IoT Platform
ajy2eb.internetofthings.ibmcloud.com/dashboard/boards/0ce5a18b-4047-48d5-b45d-74e577076ed7
Gmail
YouTube
Maps
MySQL :: MySQL 8....
IBM Watson IoT Platform
snehakothandan@gmail.com
ID: ajy2eb
Board 1
Add New Card
Settings
Line chart
Donut chart
100
80
60
40
20
0
19:36
19:38
5 minutes
now
hum
temp
Total
121
%
2 Simulations running


Service Details - IBM Cloud
IBM Watson IoT Platform
ajy2eb.internetofthings.ibmcloud.com/dashboard/boards/0ce5a18b-4047-48d5-b45d-74e577076ed7
Gmail
YouTube
Maps
MySQL :: MySQL 8....
IBM Watson IoT Platform
Board 1
Line chart
5 minutes
hum
Card source data
1234
Card preview
Card information
Connect data set
hum
temp
randomNumber
Event
Pro2
Property
randomNumber
Name
randomNumber
Type
Text
Unit
Back
Next
snehakothandan@gmail.com
ID: ajy2eb
Add New Card
Settings


Service Details - IBM Cloud
IBM Watson IoT Platform
ajy2eb.internetofthings.ibmcloud.com/dashboard/boards/0ce5a18b-4047-48d5-b45d-74e577076ed7
IBM Watson IoT Platform
Board 1
Line chart
Card source data
1234
Card preview
Card information
Connect data set
hum
temp
randomNumber
Event
Pro2
Property
randomNumber
Name
randomNumber
Type
Text
Unit
Back
Next
snehakothandan@gmail.com
ID: ajy2eb
Add New Card
Settings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IBM Watson IoT Platform
ajy2eb.internetofthings.ibmcloud.com/dashboard/boards/0ce5a18b-4047-48d5-b45d-74e577076ed7
IBM Watson IoT Platform
snehakothandan@gmail.com
ID: ajy2eb
Board 1
Add New Card
Settings
Line chart
Donut chart
Total
235
%
1 minute
now
hum
temp
randomNumber
2 Simulations running