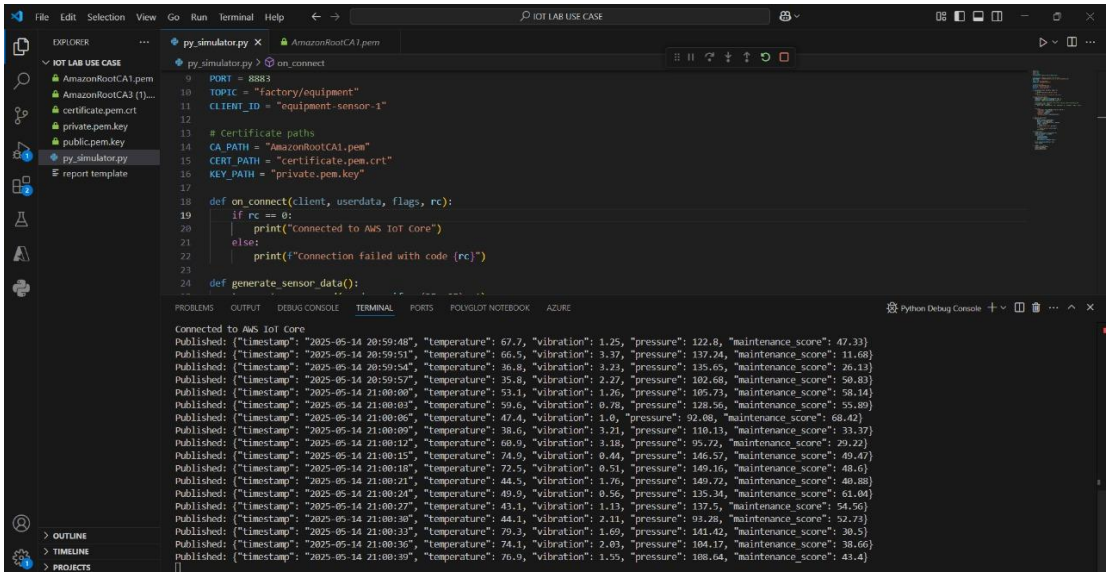
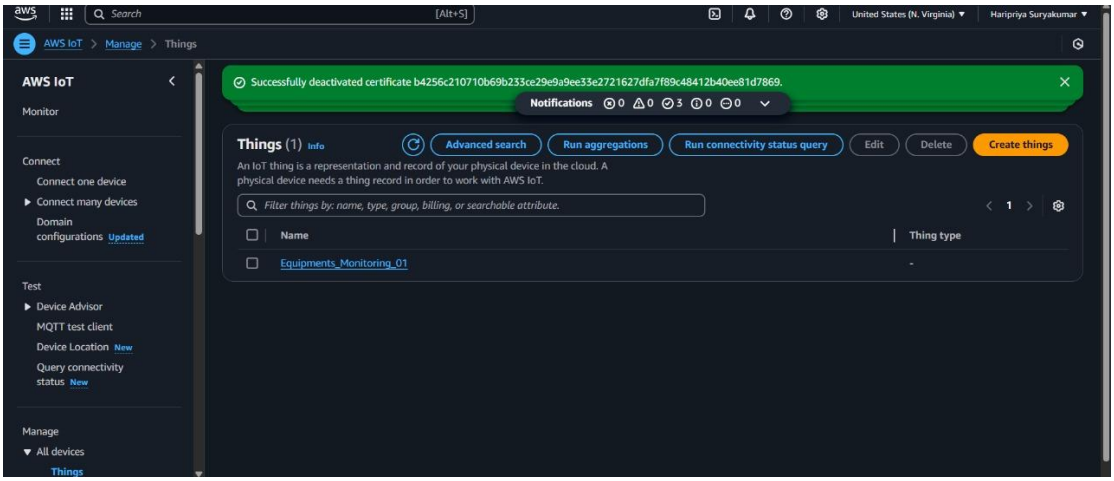
## STEP 01 : DATA GENERATION AND INGESTION

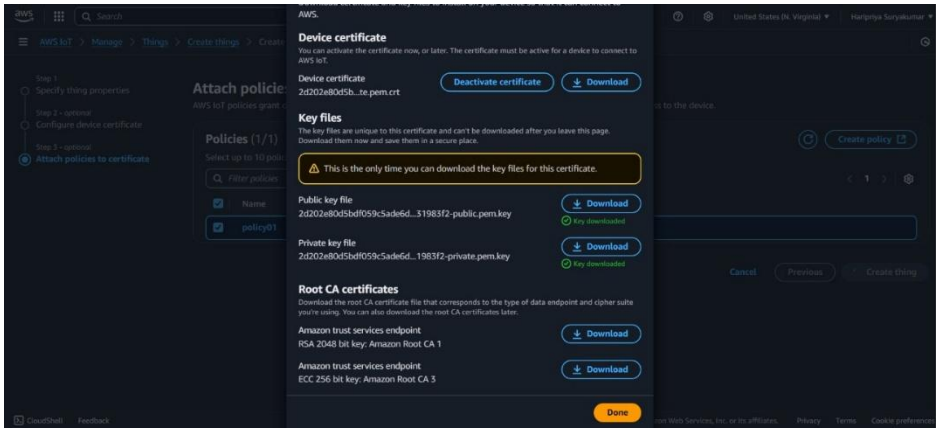
### 1.1: Generating Sensor(Json) Data Using Python Code In Vs Code – Desktop



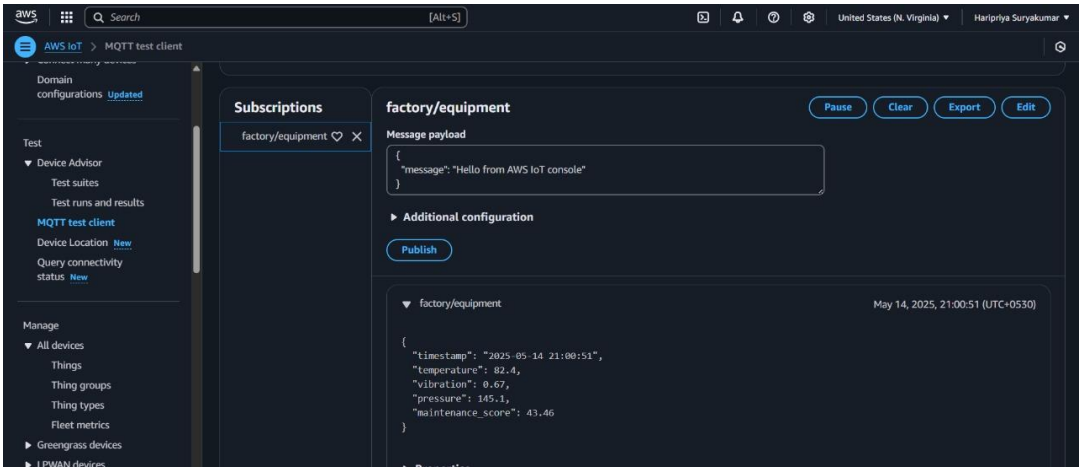

### 1.2 AWS IOT CORE CREATION




### 1.3 AWS IOT CORE – CERTIFICATES

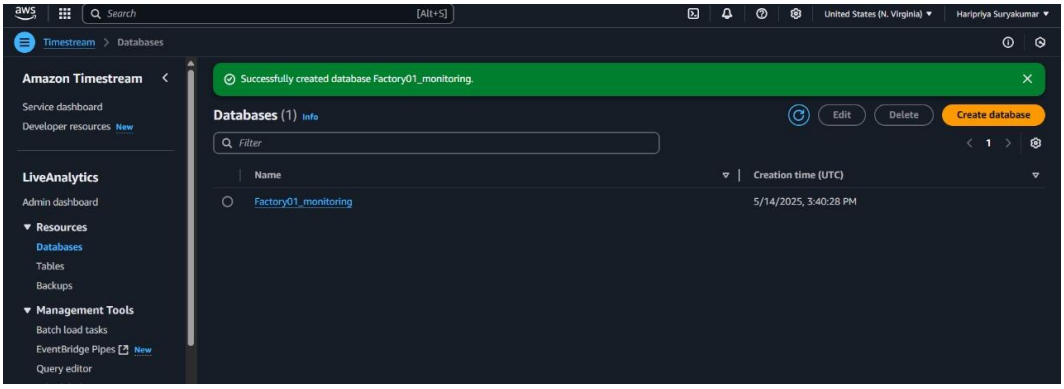


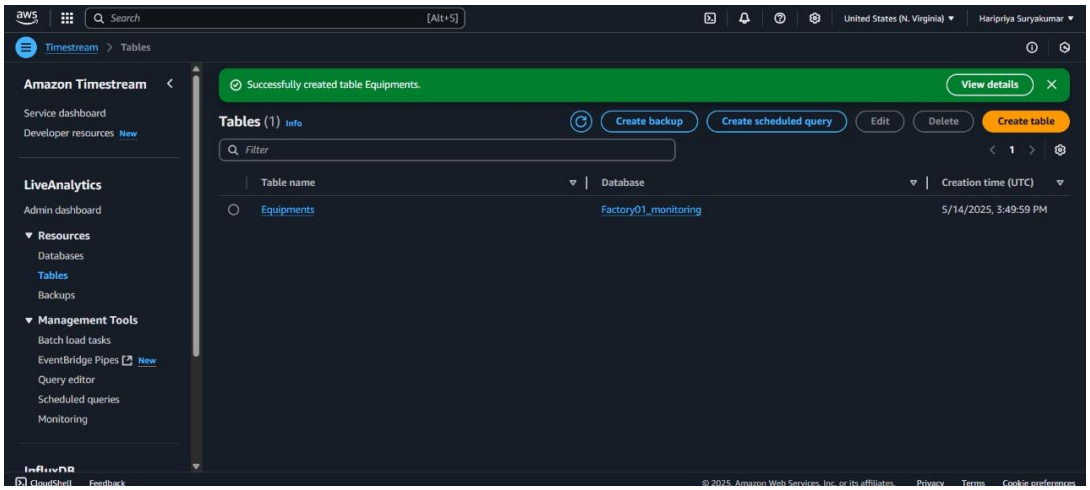
1.4 MQTT TEST CLIENT RECEIVING DATA



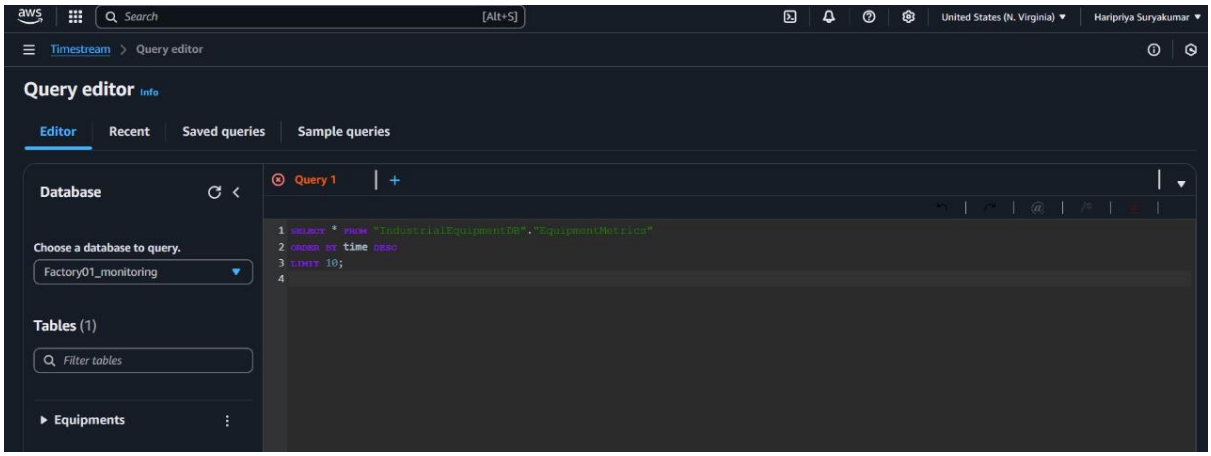

## STEP 02: DATA PROCESSING & LOADING

2.1 Storing time-stamped JSON data in AWS Timestream – creating database followed by table inside database



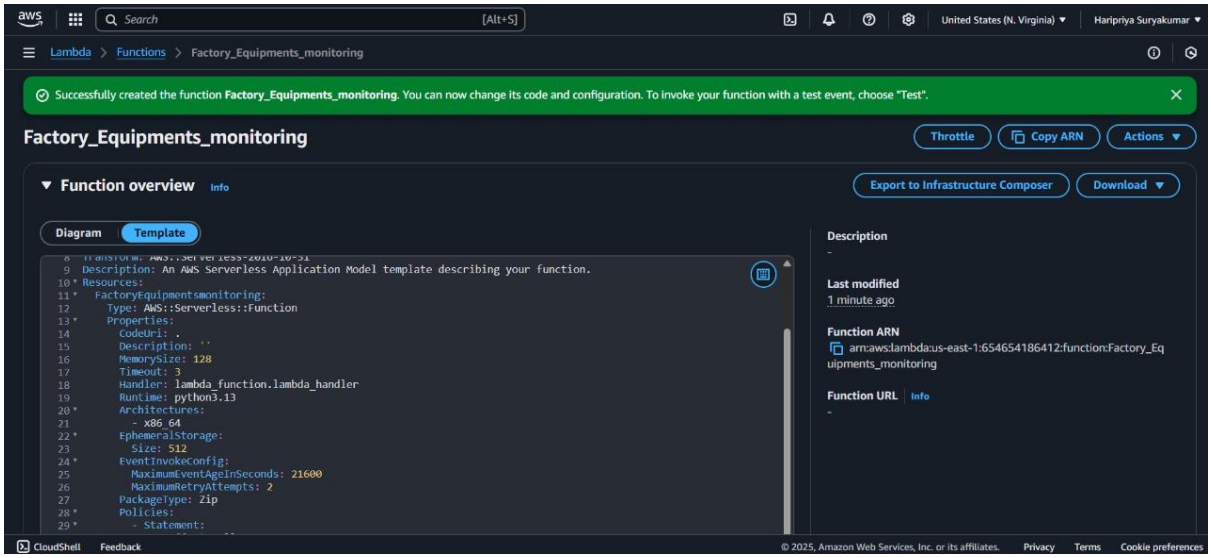



2.2 Filtering data from timestream to AWS Lambda using query in query editor

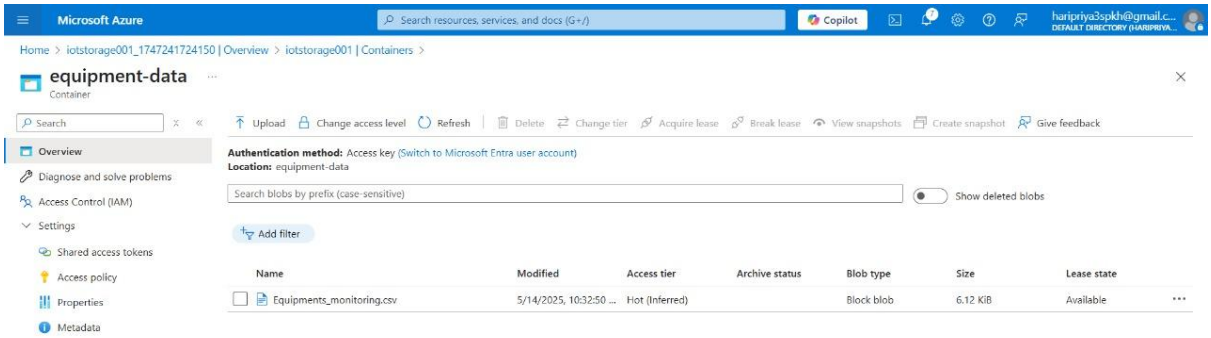



## STEP 03: PUSHING DATA FROM AWS TO AZURE BLOB USING AWS LAMBDA

3.1 Connecting the source(AWS Timestream database) and destination(AZURE blob storage - container) to AWS Lambda using python code and their respective URLs and access keys.

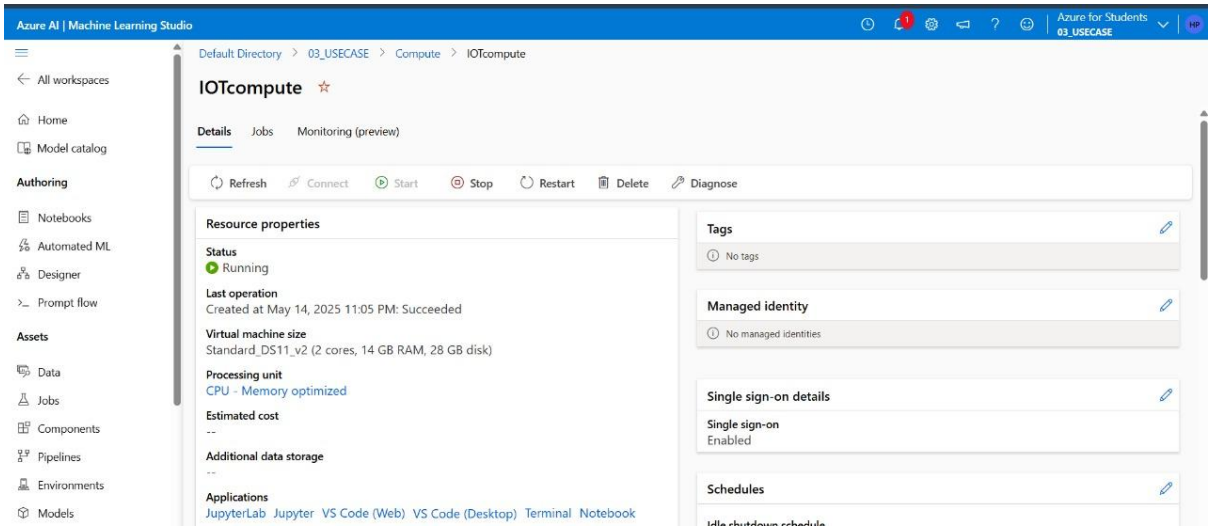



3.2 Data getting stored in azure blob as .csv file

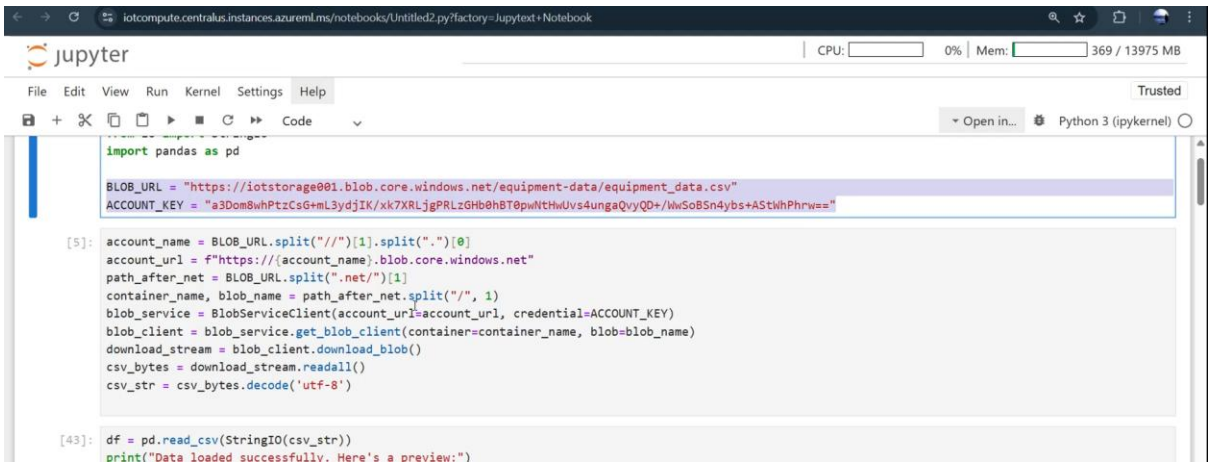


## STEP 04: PREDICTIVE MAINTAINANCE IN AZURE ML

### 4.1 Creating ML workspace Azure ML




### 4.2 Model loading, training & testing in Jupyter in Azure ML – Virtual machine



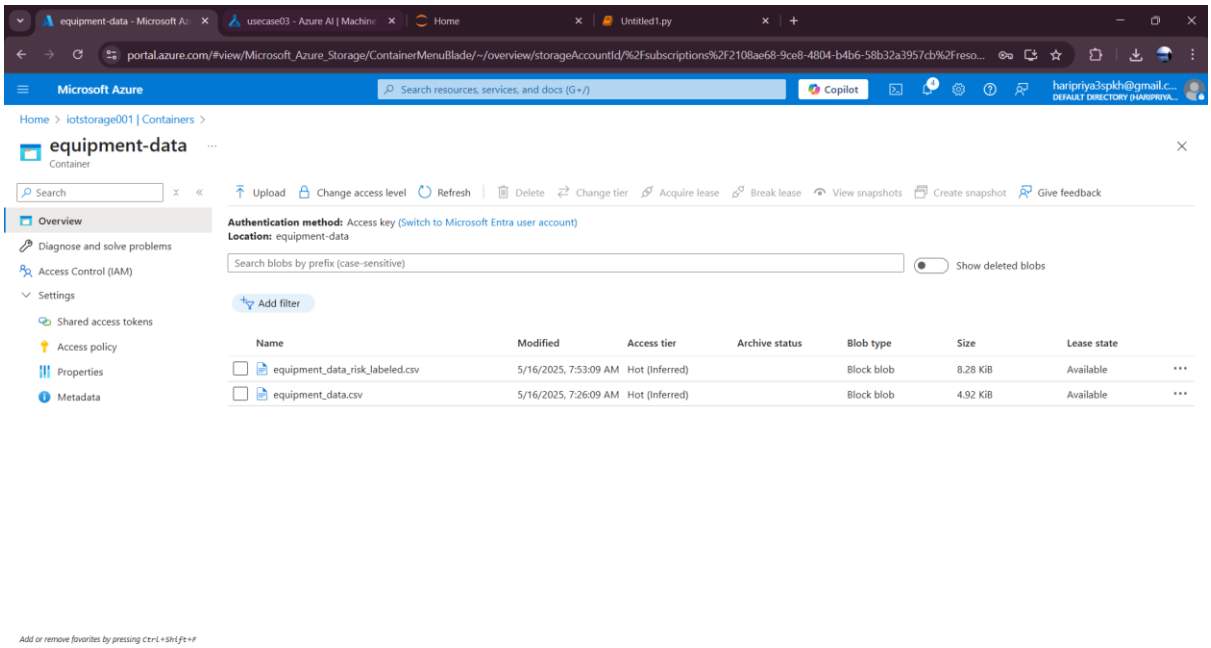

### 4.3 Classification report

```
Accuracy: 0.9
Classification Report:
              precision    recall  f1-score   support

           0       0.79      1.00      0.88        11
           1       1.00      0.84      0.91        19

    accuracy                           0.90        30
   macro avg       0.89      0.92      0.90        30
weighted avg       0.92      0.90      0.90        30
```

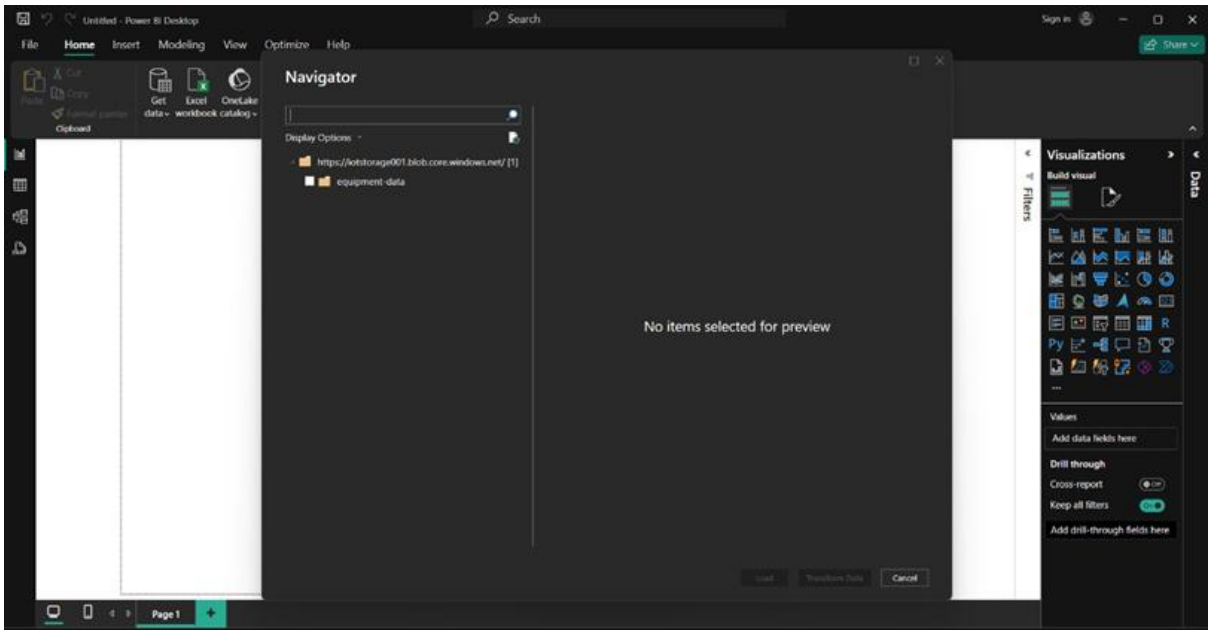
## 4.4 Predictions stored in same container as .csv file




## STEP 05: VISUALIZATIONS

## 5.1 POWER BI

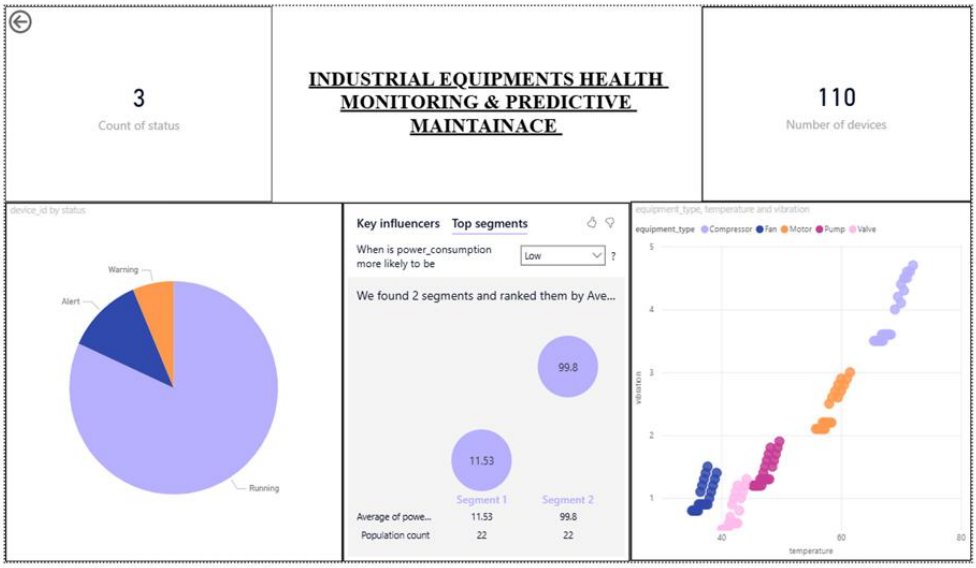
### 5.1.1 Connecting Azure blob storage to Power BI Desktop



### 5.1.2 Raw data dashboard

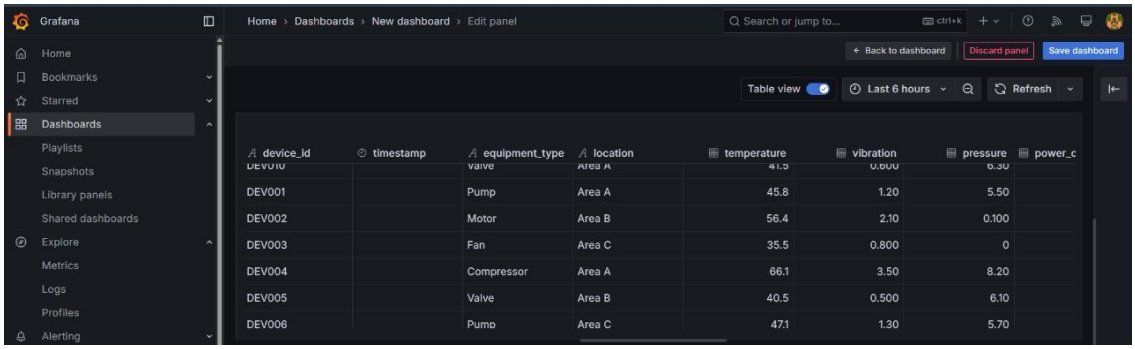

### 5.1.3 Predictive Analysis data dashboard

5.2




## GRAFANA DASHBOARD – LIVE DATA STREAM

### 5.2.1 Table view




| device_id | timestamp | equipment_type | location | temperature | vibration | pressure | power_c |
|---|---|---|---|---|---|---|---|
| DEV010 | | Valve | Area A | 41.5 | 0.600 | 6.30 | |
| DEV001 | | Pump | Area A | 45.8 | 1.20 | 5.50 | |
| DEV002 | | Motor | Area B | 56.4 | 2.10 | 0.100 | |
| DEV003 | | Fan | Area C | 35.5 | 0.800 | 0 | |
| DEV004 | | Compressor | Area A | 66.1 | 3.50 | 8.20 | |
| DEV005 | | Valve | Area B | 40.5 | 0.500 | 6.10 | |
| DEV006 | | Pump | Area C | 47.1 | 1.30 | 5.70 | |

## 5.2.2 Dashboard