iNeuron

Project Title	Energy Data Analytics
Technologies	Business Intelligence
Domain	Energy and Petrolieum
Project Difficulties level	Intermediate

Problem Statement:

Today, as countries try to diversify their energy portfolios and effect a greater reliance on cleaner power, they are left with one major problem. The two main sources of renewable energy- solar and wind- are, in their very nature, variable. The power generated by a solar panel or a wind turbine is never uniform and depends on a range of external factors — intensity of solar radiation, cloud cover, wind speed — that can't be controlled.

1. The folder raw.zip has raw files which were measured in a station. As the name indicates, there are 2 inverters, 1 energy meter (named MFM) and 1 meteorological substation (named WMS)

2. The raw data is a stream of data which gets recorded by the sensors on the field and is

sent over the cloud.

3. The raw data is cleansed into a Gen-1 data format, here the following operations are performed:

a. For Inverters

i. For inverters, column i32 indicates the timestamp of the row. Make this as the first column in

the Gen1 file and rename the column header to 'Timestamp').

b. For Energy meters (MFM)

i. Same rules as above, only difference is timestamp column is m63

c. For Energy meters (MFM)

i. Same rules as above, only difference is timestamp column is w23

Sample Gen-1 data for some of the raw days is also provided (sampleGen1.zip)

***The data in the sample gen1 files have been bucketed into 5-min intervals. Ignore this

operation***

Expected output format:

There needs to be a Gen-1 file for every raw data file. The attached raw.zip has data for each substation. The output format needs to be as follows:

[Station ID]

|---> [Year]

|---->[Year-Month]

|--->[Substation-ID]

|---> [Gen-1 Data.txt]

The station ID for the given raw data is IN-023C

Year needs to be determined based on the timestamp of the file

Year-Month needs to be determined based on the timestamp of the file

Substation-ID depends on the substation read (example Inverter-1, MFM, WMS etc)

Gen 1 Data.txt has the same name as the raw file.txt

Attached an example for your reference:

Files to be submitted:

Gen-1 data (Zipped file maintaining folder structure described above)

Python Code used to generate Gen-1 data with comments

OR

R Code used to generate Gen-1 data with comments

Dataset:

Datasets are available in zip files. Google Drive links have been shared below:

https://drive.google.com/drive/folders/1YOQ46ulH8vETXy2daVM2cPSKze_84yA8?usp=sharing

Approaches:

Python, R, Tableau, Power BI or you can use any tools and techniques as per your convenience. We would appreciate your valid imagination in finding solutions

Project Evaluation metrics:

Code:

- You are supposed to write a code in a modular fashion
- Safe: It can be used without causing harm.
- Testable: It can be tested at the code level.
- Maintainable: It can be maintained, even as your codebase grows.
- Portable: It works the same in every environment (operating system)
- You have to maintain your code on GitHub.
- You have to keep your GitHub repo public so that anyone can check your code.
- Proper readme file you have to maintain for any project development.
- You should include basic workflow and execution of the entire project in the readme file on GitHub
- Follow the coding standards: https://www.python.org/dev/peps/pep-0008/

Database:

- You are supposed to use a given dataset for this project.
- **https://drive.google.com/drive/folders/1YOQ46ulH8vETXy2daVM2cPSKze_84yA8?usp=sharing**

Submission requirements:

High-level Document:

You have to create a high-level document design for your project. You can reference the HLD form below the link.

Demo link:

HLD Document Link

Low-level document:

You have to create a Low-level document design for your project; you can refer to the LLD from the below link.

Demo link:

Low Level Design Sample document link

Architecture:

You have to create an Architecture document design for your project; you can refer to the Architecture from the below link.

Demo Link:

Architecture Document Link

Wireframe:

You have to create a Wireframe document design for your project; refer to the Wireframe from the below link.

Demo link

Wire-frame link

Project code:

You have to submit your code GitHub repo in your dashboard when the final submission of your project.

Demo link

Project code sample link :

Detail project report:

You have to create a detailed project report and submit that document as per the given sample.

Demo link

DPR sample link

Project demo video:

You have to record a project demo video for at least 5 Minutes and submit that link as per the given demo.

Demo link

Project sample link :

The project LinkedIn a post:

You have to post your project detail on LinkedIn and submit that post link in your dashboard in your respective field.

Demo link

Linkedin post sample link :