ENERGYINSIGHT

Purpose of the Project:

EnergyInsight aims to provide comprehensive analysis and insights into global energy consumption, production trends, and environmental impacts using SQL as the primary tool for data storage and analysis. This console-based Python application focuses on using SQL queries to derive meaningful conclusions from energy-related datasets.

Tech Stack You Would Use:

- Python
- BigQuery
- GCP

Functionalities and Constraints:

Functionalities Needed for EnergyInsight Application:

Data Management:

- **Data Import:** Ability to import multiple datasets containing ISO code, country, year, and energy-related information into the SQLite database.
- **Data Integrity:** Ensure data integrity and validation during the import process to avoid inconsistencies.
- **Data Update:** Provide functionality to update existing dataset records or append new data to existing records.

Analysis and Insights:

- **SQL-Based Analysis:** Perform SQL queries for various analytical tasks like trend analysis, growth rates calculation, correlation analysis between different energy sources, etc.
- **Trend Identification:** Identify trends in energy consumption and production over different periods and across various countries.
- **Environmental Impact Assessment:** Analyse the environmental impact by identifying countries with significant changes in energy production (e.g., coal production increase).

Visualization and Reporting:

- **Textual Reports:** Generate textual summaries or reports showcasing the results of SQL analysis within the console interface.
- **Data Visualization (Optional):** Explore possibilities for basic graphical representations within the console interface (e.g., ASCII-based charts or simple text-based diagrams).

CRUD (Create, Read, Update, Delete) Operations:

- **Create:** Enable importing new datasets or adding new records to the existing dataset.
- **Read:** Retrieve and display information based on SQL queries for analysis and reporting.
- **Update:** Modify existing data records or datasets for refining analysis or updating information.
- **Delete:** Allow removal of unnecessary datasets or data records for data management purposes.

Review Date:

Implementation and Enhancement:

- **Duration:** 1 weeks
- **Review Date:** 5-02-2024
- **Tasks:** Implementing BigQuary and Developing in GCP .

Scalability and Performance:

- **Performance Optimization:** Optimize SQL queries and database operations for improved application performance, especially with large datasets.
- **Scalability Consideration:** Design the application architecture considering future scalability and potential integration of additional datasets or functionalities.

Conclusion:

EnergyInsight, a Python console-based application using SQLite for data storage, aims to perform comprehensive energy analysis entirely through SQL queries. This project proposal outlines a structured approach focusing on SQL analysis within the console interface, delivering insights into global energy trends using SQL's querying capabilities.