

The Jupyter Notebook appears to contain several Python code cells focused on data analysis, specifically using libraries like `pandas`. Here is a summary of the contents:

1. **Data Loading and Preprocessing:**
  - The notebook imports essential libraries (`pandas`, `numpy`, etc.) and loads a dataset, presumably in CSV format, using `pandas`.
  - It includes basic data exploration steps, such as checking the shape, structure, and summary statistics of the data, which indicates an interest in understanding the initial data characteristics.
2. **Data Cleaning:**
  - Various data cleaning steps are applied, like handling missing values, filtering data, and possibly renaming columns or modifying data types. This step prepares the dataset for further analysis.
3. **Data Transformation and Feature Engineering:**
  - Some cells involve transforming data, creating new columns, or deriving insights from existing ones. This may include grouping, aggregating, or merging datasets to enrich the analysis.
4. **Data Analysis and Visualization:**
  - Basic exploratory analysis is conducted, often with summary statistics or visualization (if applicable). However, specific graphs or charts are not detailed here, suggesting that any visual exploration may focus on distributions or comparisons.
5. **Database Connection Setup:**
  - The notebook uses the `sqlalchemy` library to establish a connection with a SQL database. The connection string includes database credentials, host, port, and other necessary details to securely connect to a remote SQL server.
  - A typical connection pattern is used, involving creating an `engine` with `sqlalchemy.create_engine()`

The SQL file contains queries for analyzing order details within a table named `df_orders`. Here's a summary of its contents:

1. **Data Retrieval:** Basic selection of all columns and rows from `df_orders`.
2. **Top 10 Revenue Generating Products:**
  - Calculates the top 10 products based on the highest sales by grouping data by `product_id` and summing `sale_price`.
3. **Top 5 Highest Selling Products by Region:**
  - Uses a Common Table Expression (CTE) to calculate sales by `region` and `product_id`.
  - Then, it ranks products within each region by sales and selects the top 5 for each region.
4. **Month-over-Month Sales Growth for 2022 vs. 2023:**
  - Another CTE calculates monthly sales by year and month.
  - A final query compares sales between the months of 2022 and 2023, displaying them side by side.