RentalSight: An Online Movie Rental Warehouse

Introduction

In the dynamic landscape of online movie rentals, efficient data management is pivotal for success. Introducing Rentalsight, a comprehensive data warehouse crafted to empower online movie rental stores with insightful analytics, seamless inventory management, and strategic rental oversight

Deliverables

Revenue Trend Analysis:

- Explore revenue trends over specified time periods.
- Visualize revenue patterns based on movie genres, or ratings.
- Identify peak revenue periods and potential areas for revenue growth.

Inventory Management:

- Track inventory levels in real-time.
- Identify slow-moving or obsolete inventory for strategic decision-making.
- Measure the efficiency of inventory management and return policy

Rental Oversight:

- Analyze rental patterns.
- Optimize rental pricing based on demand and historical data.

User-Friendly Interface:

- Intuitive dashboards for easy navigation and quick access to key metrics.
- Customizable reports to tailor insights to specific business requirements.
- Real-time data updates for timely decision-making.

ETL phase

Extraction:

Data was extracted from an online dataset comprised of many individual tables in csv and JSON formats.
Original data can be found in source_data folder.

Transformation:

Data is then transformed using Python and the Pandas library.

- The following files were used to individually filter out and transform certain data and save them into csv files located in the main folder: transform_address.py, transform_film.py, transform_customer.csv, transform_rental.csv, transform_store.py.
- The files create_inventory_snapshot.py and create_rental_transactions.py are used to create the two fact tables that will be employed in our analysis later on.
- the ETL.ipynb is a jupyter notebook created to execute all transformations, yielding the following csv files found in the main folder: address.csv, customer.csv, store.csv, film.csv, rental.csv, day.csv, year.csv, month.csv, rental_transactions.csv, inventory_snapshot.csv

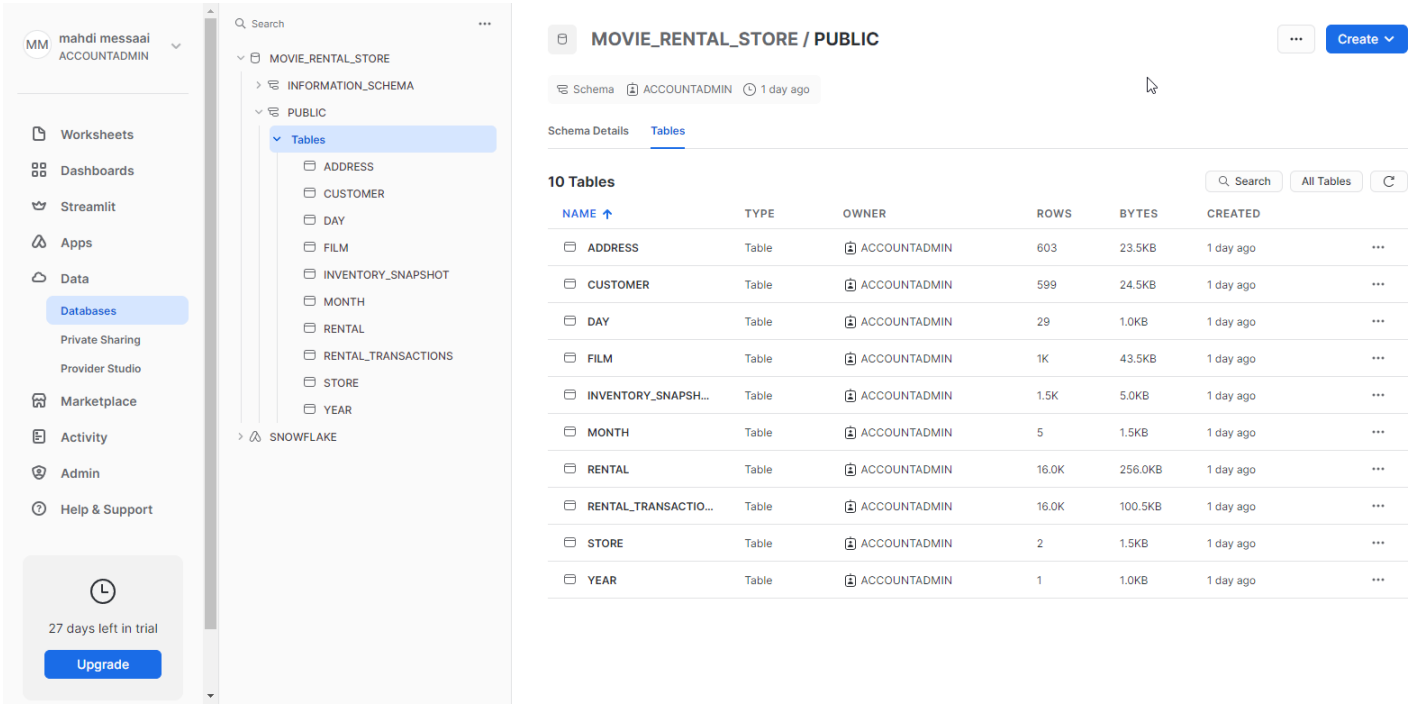
Loading:

Data is then loaded onto a snowflake ROLAP database.

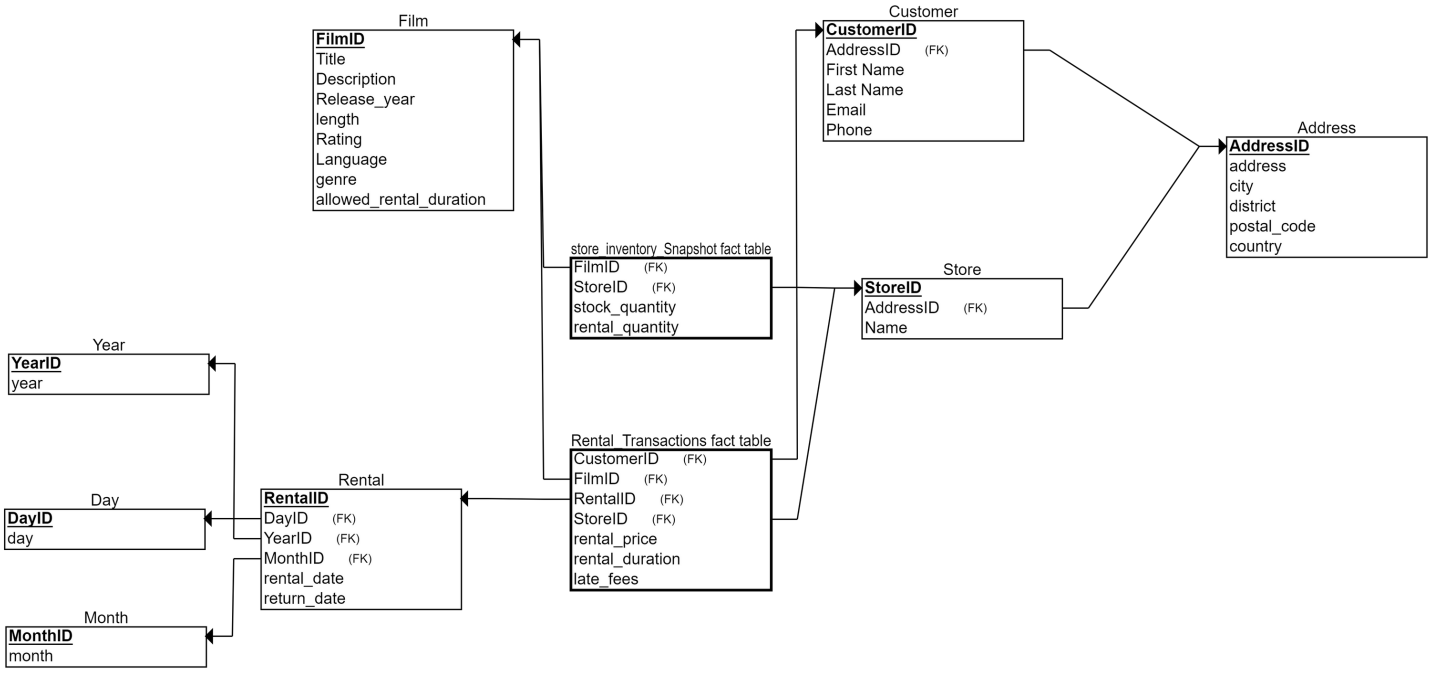
This database can be accessed through this link:
https://vn58684.westeurope.azure.snowflakecomputing.com

username: slimboyfu

password: Testingtesting1$



Data Warehousing



Store_inventory_snapshot: used to store historical data on stock and rented quantities by store and movie.

Rental_Transactions: used to store historical data on all transactions occurring in all stores. Its measures are the following:

- rental_price: price to rent a certain movie.
- rental_duration: actual rental duration of a movie by a customer

- late_fees: any incurred late return fees. (By default, 1$ is charged to the customer for every 1 day delay)

We have also identified the following dimensions:

- Film
- Rental
- Year
- Day
- Month
- Customer
- Store
- Address

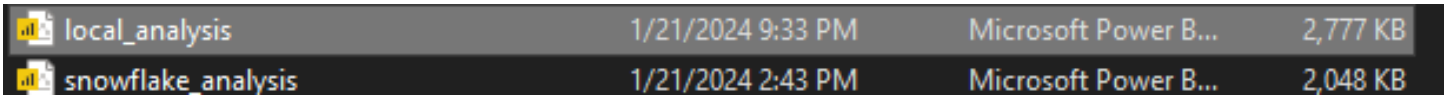
Analysis

Analysis was done using Power BI.

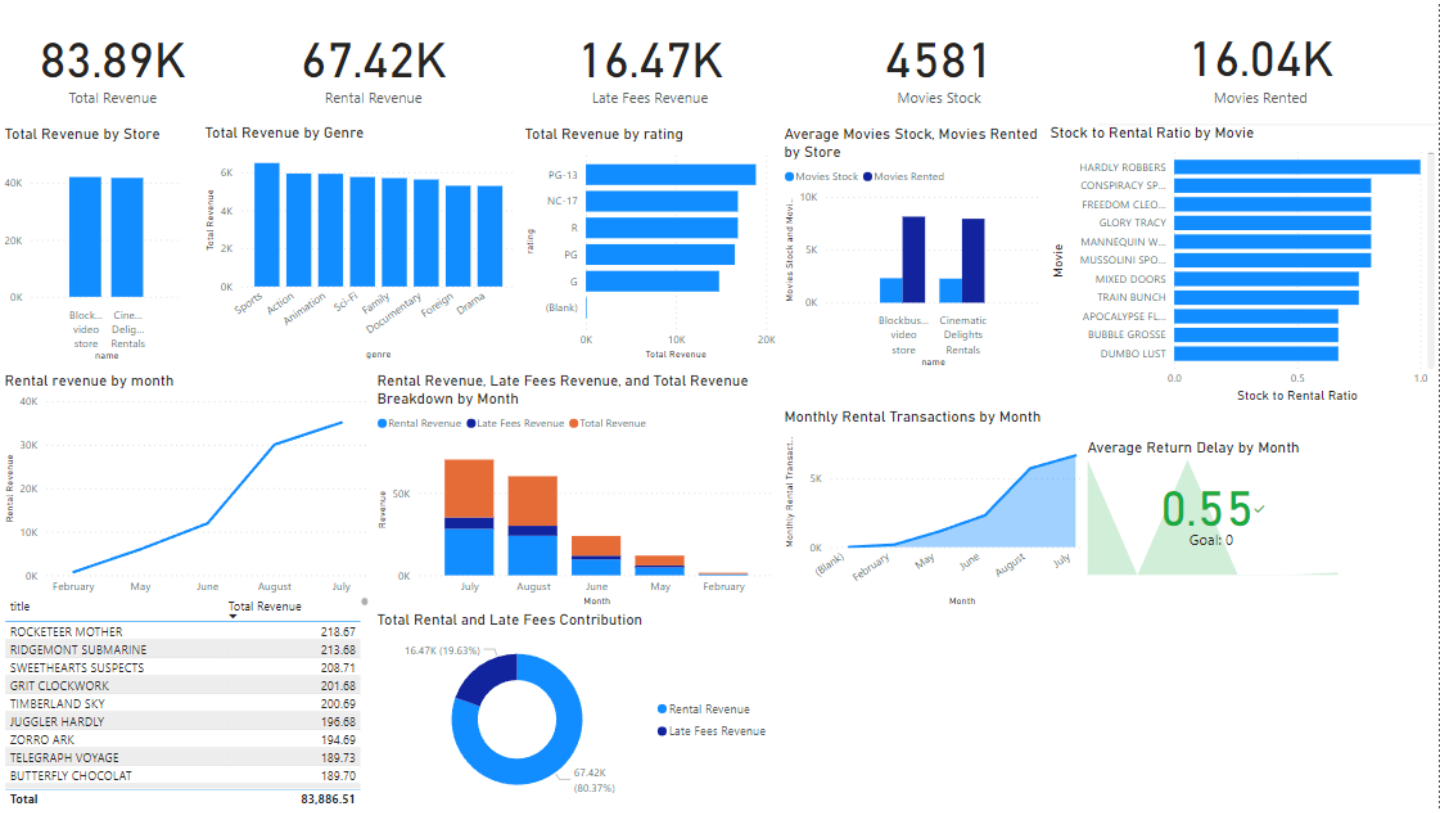
Two PowerBI files are included in the main folder: snowflake_analysis and local_analysis.

The two are identical. The only difference is snowflake_analysis gets its data from snowflake directly. That requires authentication or else it would fail to load any visualizations.

local_analysis uses the local files in the folder. This one should be used if you wish not to connect to snowflake.



Upon loading up local_analysis.pbix. You are introduced to the dashboard.



Conclusion

Few things to note about the project:

- Data was not of the highest quality as can be seen from the visualizations. Barely any difference between the two stores. That made for some rather disappointing visualizations.
- Project could have been much more informative had I added more data and probably added a couple more dimensions.
- Working on this alone was a bit tough
- More complex and interesting KPIs were supposed to be done but were cut out due to lack of time/expertise.