Airbnb Analysis

Problem Statement:

This project aims to analyze Airbnb data using MongoDB Atlas, perform data cleaning and preparation, develop interactive geospatial visualizations, and create dynamic plots to gain insights into pricing variations, availability patterns, and location-based trends.

Domain: Travel Industry, Property Management and Tourism

Tech stack employed:

- Python scripting,
- Data Preprocessing,
- Visualization,
- EDA,
- SQL
- Streamlit,
- MongoDb,
- Tableau

Work Flow:

1. **MongoDB Connection and Data Retrieval:** Establish a connection to the MongoDB Atlas database and retrieve the Airbnb dataset. Perform queries and data retrieval operations to extract the necessary information for your analysis.

2. **Data Cleaning and Preparation:** Clean the Airbnb dataset by handling missing values, removing duplicates, and transforming data types as necessary. Prepare the dataset for EDA and visualization tasks, ensuring data integrity and consistency.

3. **Geospatial Visualization:** Develop a streamlit web application that utilizes the geospatial data from the Airbnb dataset to create interactive maps. Visualize the distribution of listings across different locations, allowing users to explore prices, ratings, and other relevant factors.

4. **Price Analysis and Visualization:** Use the cleaned data to analyze and visualize how prices vary across different locations, property types, and seasons. Create dynamic plots and charts that enable users to explore price trends, outliers, and correlations with other variables.

5. **Availability Analysis by Season:** Analyze the availability of Airbnb listings based on seasonal variations. Visualize the occupancy rates, booking patterns, and demand fluctuations throughout the year using line charts, heatmaps, or other suitable visualizations.

6. **Location-Based Insights:** Investigate how the price of listings varies across different locations. Use MongoDB queries and data aggregation techniques to extract relevant information for specific regions or neighborhoods. Visualize these insights on interactive maps or create dashboards in tools like Tableau or Power BI.

7. **Interactive Visualizations:** Develop dynamic and interactive visualizations that allow users to filter and drill down into the data based on their preferences. Enable users to interact with the visualizations to explore specific regions, property types, or time periods of interest.

8. **Dashboard Creation**: Utilize Tableau or Power BI to create a comprehensive dashboard that presents key insights from your analysis. Combine different visualizations, such as maps, charts, and tables, to provide a holistic view of the Airbnb dataset and its patterns.

Dashboard Sample: