Problem Statement: Airbnb Price & Scenario Analysis Dashboard

Objective:

Develop an interactive Power BI dashboard for Airbnb listings in Antwerp, enabling property owners and stakeholders to analyze listing performance and explore revenue scenarios without relying on machine learning.

Key Requirements:

1. **Data Ingestion & Cleaning:**
    a. Connect to Airbnb data sources (Calendar, Listings, Hosts, Reviews).
    b. Clean “price” fields, standardize text attributes, and validate date formats.
    c. Break out nested fields (e.g., amenities) and normalize review and host tables.
2. **Data Modeling:**
    a. Construct a star schema linking Listings, Calendar, Hosts, and Reviews.
    b. Compute aggregated metrics such as average price, total active days, review count, host age, and availability rates.
3. **Parameterized Scenario Analysis:**
    a. Build Power BI “What-If” parameters for occupancy rates and seasonal pricing multipliers.
    b. Create DAX measures to calculate projected revenue and scenario-based prices based on user-defined sliders.
4. **Visualization & User Experience:**
    a. Design a three-page report:
        i. Overview: KPI cards (average price, availability rate, total listings, projected revenue) and slicers (date, property type, room type, occupancy, seasonal multiplier).
        ii. Listing Analysis: Map of listings by location, price distribution histogram, and top listings table.
        iii. Scenario Insights: Scenario price comparison charts, projected revenue trend lines, and detailed listing drill-through.
    b. Implement interactive features, including drill-through, custom tooltips, bookmarks, and dynamic slicers.
5. **Testing & Optimization:**
    a. Verify DAX measures against raw data aggregations and validate scenario outputs.
    b. Optimize the data model and DAX formulas to ensure performant report refresh and rendering.

6. **Documentation & Deployment:**
    a. Provide a user guide for report navigation and data refresh steps.
    b. Document the data model, DAX formulas, and “What-If” parameter setup.
    c. Publish the final report to Power BI Service and configure scheduled refresh.

Outcome:

A self-service Power BI solution that empowers users to evaluate Airbnb price trends, simulate revenue under different occupancy and pricing scenarios, and make informed decisions based on up-to-date listing data.