Task #1 Documentation

Project Title: Exploratory Data Analysis (EDA) on Airbnb Listings

Project Description: In this project, you will perform basic data analysis on a dataset of Airbnb listings. EDA is a fundamental step in data science that involves exploring and understanding the data before diving into more complex analysis or modeling.

Steps I followed:

1. **Data Collection:** I downloaded the data from the Kaggle and used the listings file
2. **Data Exploration:** Here I explored the data by display a sample from it, display the dataset shape, describe, and info, which give me a strong overview about the data before I start cleaning.
3. **Data Cleaning:** Here I started by dropping duplicate columns, columns with full NA, columns with only one unique value, columns representing url, host related columns, and specified columns with high missing values, then I reformatted the money related columns, finally, I treated with Null values using two different approaches, using median imputation with numeric columns and mode imputation with categorical columns.
4. **Basic Statistics:** I displayed the summary statistics for price columns, average number of bedrooms, average number of bathrooms, and average review score rating, also I displayed the estimated occupancy rates.
5. **Visualization:** Actually I displayed a lot of important plot such as: Distribution of Property Types, Distribution of Neighborhoods, Price Distribution, Number of Listings by Neighborhood, Price by Room Type, and Availability by Neighborhood and others.
6. **Correlation Analysis:** For simplicity, I displayed the correlation matrix of selected features.
7. **Data Insights:** After finishing my work, I documented some important insights related to columns that I worked on, for example: Price and Accommodation Features, Property and Room Types, Neighborhood Popularity, Occupancy and Availability, and Correlation Insights.

Each of these steps represents a critical phase in the data analysis process, providing actionable insights to different stakeholders in the Airbnb marketplace. From understanding the data to drawing strategic conclusions, this documentation captures the analytical journey I have undertaken.