**Hotel Booking Analysis**

This project analyzes hotel booking data to gain insights into booking patterns, cancellations, and other factors that affect hotel reservations. The dataset used for analysis contains information about hotel bookings, including customer details, booking dates, room types, and reservation status.

**Dataset**

The dataset used for this analysis is the "hotel\_bookings.csv" file. It consists of the following columns:

* hotel: The type of hotel (Resort Hotel or City Hotel)
* is\_canceled: Whether the booking was canceled (1 if canceled, 0 if not canceled)
* lead\_time: Number of days between booking and arrival
* arrival\_date\_year: Year of arrival date
* arrival\_date\_month: Month of arrival date
* arrival\_date\_week\_number: Week number of arrival date
* arrival\_date\_day\_of\_month: Day of the month of arrival date
* stays\_in\_weekend\_nights: Number of weekend nights (Saturday or Sunday) the guest stayed
* stays\_in\_week\_nights: Number of week nights (Monday to Friday) the guest stayed
* adults: Number of adults
* children: Number of children
* babies: Number of babies
* meal: Type of meal booked
* country: Country of origin
* market\_segment: Market segment designation
* distribution\_channel: Booking distribution channel
* is\_repeated\_guest: Whether the guest is a repeated guest (1 if repeated, 0 if not repeated)
* previous\_cancellations: Number of previous bookings that were canceled by the guest
* previous\_bookings\_not\_canceled: Number of previous bookings that were not canceled by the guest
* reserved\_room\_type: Type of room reserved
* assigned\_room\_type: Type of room assigned at check-in
* booking\_changes: Number of changes made to the booking
* deposit\_type: Type of deposit made for the booking
* days\_in\_waiting\_list: Number of days the booking was on the waiting list before confirmed
* customer\_type: Type of customer (Transient, Contract, Transient-Party, Group)
* adr: Average daily rate (price) per room
* required\_car\_parking\_spaces: Number of car parking spaces required by the guest
* total\_of\_special\_requests: Number of special requests made by the guest
* reservation\_status: Reservation status (Check-Out, Canceled, No-Show)
* reservation\_status\_date: Date at which the reservation status was last updated

**Data Cleaning**

Before performing analysis, the dataset was cleaned to handle missing values and remove irrelevant columns. The columns "company" and "agent" were dropped as they contained a large number of missing values. Other missing values in the dataset were handled based on the context of the data.

**Data Analysis**

The analysis includes the following:

* Cancellation Percentage: The percentage of bookings that were canceled.
* Reservation Status by Hotel: The distribution of reservation statuses (canceled vs. not canceled) for different types of hotels.
* Average Daily Rate: The average daily rate (price) of rooms in the city hotel and resort hotel over time.

The analysis provides insights into booking trends, cancellation rates, and pricing patterns, which can be valuable for hotel management and decision-making.

**Libraries Used**

The following libraries were used for data analysis and visualization:

* pandas: Data manipulation and analysis
* matplotlib: Data visualization
* seaborn: Data visualization
* warnings: Managing warning messages

**Usage**

To run the analysis, follow these steps:

1. Install the required libraries mentioned in the "Libraries Used" section.
2. Load the dataset "hotel\_bookings.csv" into your working directory.
3. Run the code cells in the Jupyter Notebook or Python script to perform the analysis.
4. Explore the generated