Database Management for Airbnb

Airbnb is an online marketplace for short-term rentals of homes, apartments, and other lodgings. In this project, I tried to develop a database for storing and processing information related to the Airbnb use case.

The developed database for the Airbnb-like platform serves as the backbone for managing and storing data related to user profiles, accommodations, bookings, and ratings. The latter is responsible for facilitating the transaction between hosts and guests by handling the booking process and managing payments. In one hand, The database enables hosts to create a textual and visual representation of their accommodations, and in the other hand, it enables guests to browse and book accommodations based on their preferences.

To ensure data integrity, constraints such as data type and data range were set up to prevent invalid data entry. The database is also supporting querying and reporting functionality, allowing for valuable insights to be extracted from the data. Proper documentation of the database schema and data dictionary was implemented to help other developers to understand the structure of the database and how to interact with it. In short, the database was developed with high focus on small details to ensure the efficient and effective functioning of it, facilitating smooth transactions between hosts and guests and enabling valuable insights to be extracted from the data.

Entity Relationship Model

The entity relationship model (ERM) was built to describe the structure of the database, including the entities (tables), their attributes, and the relationships between them. Here is the main components of the database :

- Accommodations: includes information about each accommodation, such as its category, description, price, location and availability.
- Users: includes information about each user, such as their name, email address, phone number, bank account etc .
- Orders: includes information about each order, such as its status (if it is confirmed or not), the confirmation date and the booking it belongs to.
- Transactions: includes information about each transaction, such as the amount of the transaction, the currency, the method used etc .
- The commission: This component was specifically implemented to accurately identify the commission token from both the guest and the host, ensuring efficient and error-free processing of commission payments.

We then defined the relationships between these entities. For example, each accommodation is associated with a user who owns it, and each transaction needs one payment to be processed and then forwarded to the company bank account .

Database Management System

I chose to use MySQL as the database management system for this project. MySQL is a popular open-source database system that supports SQL as its basic language.

I defined the structure of the database in MySQL, including the creation of tables and their corresponding attributes. I also created dummy data to ensure that the database was appropriately populated.

Normalization

I normalized the database in an appropriate way to ensure that only necessary data was stored. This involved breaking down larger tables into smaller ones and ensuring that each table had a primary key.

Metadata

The database consists of 25 tables: Host, Pictures, Rating, Accommodation, HostCommission, Category, Status, Country, City, Street, Host BankAccount, Transaction, Currency, Admin, Admin BankAccount, Income, Orders, Admin CreditCard, Admin Commission, Guest, Booking, Payment, Photo, Guest CreditCard and Booking Status. Each table has 20 entries . The total size of the database is approximately 15 MB.

Overall, the developed database provides an efficient and effective way to store and process information related to the Airbnb use case.