

FINALISATION PHASE

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Bringing Hospitality to New Heights: An Ingenious Airbnb Data Mart

1. Overview

Online hotel reservation platforms have completely transformed the travel business by offering a quick and easy way to book lodging. Forecasts reveal a notable upward trend for the worldwide online hotel reservation industry, highlighting the noteworthy economic impact of these platforms. One of the leaders in this field, Airbnb, provides a variety of unusual lodging options, including houseboats, historic homes, and treehouses. Personalized interactions and recommendations are fostered by facilitating direct connection between hosts and visitors. Streamlining data analysis and reporting using a data mart will improve strategic planning and decision-making in the online hotel booking industry. The goal of this project is to create a data mart that draws inspiration from the unique features and design concepts of Airbnb.

1.1 Goal

The goal of this project is to create a data mart that mimics the features of the hotel booking engine used by Airbnb. Using MySQL as the database management system and MySQL Workbench to create the core data structures, the goal is to create a user-friendly, scalable Airbnb DataMart.

1.2 Approach

The project used a methodical approach and a structured development methodology:

- A) Conceptual Design: Using MySQL Workbench's Entity Relationship (ER) model, identify the key data entities (including properties, users, hosts, bookings, and reviews) and how they relate to one another.
- B) Database Schema Development: This process involves utilizing MySQL Workbench to translate the ER model into a workable database schema. It includes creating tables, defining data types, and putting in place foreign key constraints to guarantee data integrity.
- C) Data Population: Generation of sample data
- D) Testing and Improvement: Carrying out thorough functional testing in a range of scenarios. Iterative refinement was carried out to maximize performance and fix any flaws based on the results.

1.3 Functionality of Database Management

The user-friendly data management system, which takes its cues from Airbnb, is centered on two main elements: listings and users. Listings provide travelers with important details such as address, kind of property, features, availability, cost, and photos. User data includes detailed profiles with basic information and account classification (guest/host). The system also keeps track of user-generated ratings, reviews, and booking histories, which promotes a feeling of community and user

trust. Notable attributes encompass user-friendly search functions, smooth reservation procedures, transparent evaluation platforms, uncomplicated payment methods, direct communication channels, and continuous improvements determined by metrics pertaining to user engagement.

2. Schema Analysis of Airbnb

Using the query *'SHOW TABLE STATUS FROM airbnb'* allowed for a more thorough analysis of the size of the Airbnb database. This data, which describes each table and has about thirty-two entries, is kept in a comma-separated values (CSV) file that can be downloaded from the finalization directory. Below are some more details on the Airbnb schema.

1	Name	Engine	Rows	Avg_row_length	Data_length	Index_length	Create_time
2	access_level	InnoDB	20	819	16384	0	2024/04/22 17:02
3	access_level_operations	InnoDB	29	564	16384	32768	2024/04/22 17:02
4	address	InnoDB	29	564	16384	32768	2024/04/23 01:44
5	admin	InnoDB	139	117	16384	32768	2024/04/22 17:02
6	allowed_operations	InnoDB	28	585	16384	0	2024/04/22 17:02
7	amenity	InnoDB	25	655	16384	16384	2024/04/22 17:00
8	amenity_category	InnoDB	20	819	16384	16384	2024/04/22 16:59
9	country	InnoDB	25	655	16384	16384	2024/04/22 16:57
10	district	InnoDB	25	655	16384	16384	2024/04/22 16:58
11	guest	InnoDB	41	399	16384	32768	2024/04/22 17:02
12	guest_reservations	InnoDB	26	630	16384	32768	2024/04/22 16:59
13	guest_types	InnoDB	20	819	16384	0	2024/04/22 16:59
14	host	InnoDB	26	630	16384	32768	2024/04/22 16:57
15	language	InnoDB	20	819	16384	16384	2024/04/22 17:01
16	messages	InnoDB	27	606	16384	32768	2024/04/22 17:00
17	payment	InnoDB	24	682	16384	32768	2024/04/22 17:01
18	property	InnoDB	29	564	16384	65536	2024/04/22 16:58
19	property_amenity	InnoDB	32	512	16384	32768	2024/04/22 17:00
20	property_availability	InnoDB	29	564	16384	16384	2024/04/22 17:00
21	property_category	InnoDB	26	630	16384	32768	2024/04/22 16:58
22	property_images	InnoDB	35	468	16384	16384	2024/04/22 17:00
23	property_review	InnoDB	25	655	16384	32768	2024/04/22 17:00
24	property_type	InnoDB	20	819	16384	16384	2024/04/22 16:57
25	region	InnoDB	25	655	16384	32768	2024/04/22 16:57
26	reservations	InnoDB	24	682	16384	32768	2024/04/22 17:10
27	review	InnoDB	20	819	16384	32768	2024/04/22 16:59
28	review_type	InnoDB	20	819	16384	0	2024/04/22 16:53
29	social_media	InnoDB	77	212	16384	16384	2024/04/23 12:49
30	user	InnoDB	41	399	16384	49152	2024/04/22 16:56
31	user_language	InnoDB	123	133	16384	32768	2024/04/22 17:01
32	user_preferred_guest_type	InnoDB	41	399	16384	32768	2024/04/25 03:53
33	voucher	InnoDB	20	819	16384	16384	2024/04/22 17:01

3. In summary

33 tables make up the data mart's final setup, which integrates key features like property management tools, booking administration, review management, and reservation filtering. The design and optimization of the data schema were made possible using MySQL Workbench, which also made it possible to create, visualize, and improve the 33 tables. Important insights emerged from the process, including the importance of a clearly defined ER model, the need to carefully analyze the sorts of data that are used, and the effectiveness of extensive testing.

Project GitHub Repository: https://github.com/CRMawande/airbnb_datamart_iubh.git