Design and Implementation of a Database System for Airbnb

1. Abstract

This project is dedicated to creating a fully integrated database for Airbnb, the popular online booking platform. The database management system (DBMS) developed for this project incorporates all the essential functionalities required by the platform to operate effectively.

The development process involved crafting a detailed conceptual framework that included defining entities, designing an Entity-Relationship Model (ERM), and compiling data dictionaries. These elements were essential in outlining the core information and functionalities the database would support.

Once the conceptual foundation was established, the database was implemented using SQL, a standard language for database creation and management. This phase involved setting up tables, populating them with data, and performing adjustments to optimize the database for efficient operation.

To ensure the database met all specified requirements, we created and executed a series of test cases using a programming language. These tests involved querying the database and verifying that each table contained at least 20 rows of data, ensuring the database's functionality and reliability.

The final database includes 20 tables, each meticulously normalized to the third normal form to reduce redundancy and boost efficiency. Among the key tables are 'User' (which stores user information), 'Listing' (which contains data on all listings), and 'Property' (which houses property details). Each of these tables is populated with at least 20 entries, with the capacity to expand as needed.

This database was built using MySQL, a database management system recognized for its user-friendliness and robust capabilities. MySQL's fine-grained access controls ensure that the database remains secure and its integrity is preserved against unauthorized access.