Online Hotel Booking

Oracle SQL Database Project

Sayma Mushsharat
Roll: 2007036
CSE 3110: Database Systems Laboratory

Introduction

Project Overview

The Online Hotel Booking Management System (OHBMS) is specifically tailored to enhance the hotel booking process by integrating a comprehensive and user-friendly platform. This system is built on an Oracle SQL database, enabling efficient handling of booking data and customer management through streamlined operational workflows. The platform offers functionalities for customers to book rooms, review accommodations, and manage their stay preferences.

Importance of the Database in the Hotel Booking Industry

In the hotel booking industry, a robust database system is critical for ensuring smooth operational flow and maintaining high levels of customer satisfaction. The database plays a crucial role in securely storing and efficiently managing extensive data related to room bookings, customer details, hotel information, and transaction records. This system facilitates accurate and real-time access to data, which is pivotal for decision-making, customizing customer experiences, and optimizing overall hotel management.

Project Objectives

The OHBMS project is driven by several objectives that are foundational to the development of a reliable and effective hotel booking system. These objectives include:

- **To Design a Relational Database Schema for Managing Hotel Booking Data:** Craft a detailed relational database schema that robustly organizes and stores data concerning hotels, rooms, customers, and bookings. This schema should support the complex relationships and dynamic operations typical in hotel management.

- **To Implement SQL Queries for Efficient Data Retrieval and Management:** Develop a suite of SQL queries that allow for effective data manipulation and retrieval. These queries will enable the database to support various functionalities, such as creating bookings, updating room statuses, processing payments, and generating reports, which are essential for maintaining an up-to-date and comprehensive management system.

Database Design

Overview of the Database Schema

The Online Hotel Booking Management System (OHBMS) is meticulously designed to encompass all critical data related to hotel booking operations. The schema is organized around key tables that capture and manage distinct aspects of the booking process:

- **Customer:** This table stores comprehensive information about customers, including their name, national ID, passport number, address, phone number, and email. It forms the core for customer relationship management within the system.
- **Booking:** Holds records of all bookings made by customers. Details stored include booking dates, customer information, room details, check-in and check-out dates, and payment status.
- **Room:** Contains data about the rooms available for booking in various hotels, including room type, pricing, capacity, and current availability status.
- **Hotel:** Details accommodations available within the system, linking them to specific locations and amenities offered. This table includes hotel name, location, description, ratings, and contact information.
- **Payment:** Manages financial transactions related to bookings, documenting payment amounts, methods, and statuses to ensure accurate financial tracking.

Rationale Behind the Design Decisions

The database schema for OHBMS is strategically designed to optimize data retrieval and management efficiency, crucial for a high-volume, dynamic environment like hotel booking. Each table is tailored to address specific areas of the booking process:

- The **Customer** and **Booking** tables are central to managing customer interactions and booking details, ensuring personalized and efficient service.
- The **Room** and **Hotel** tables facilitate detailed accommodation management, allowing for flexible handling of various types of bookings and hotel offerings.
- The **Payment** table is crucial for financial oversight, supporting secure and precise processing of all transactions.

Table Relationships

Foreign keys and relational connections are used extensively to ensure data integrity and facilitate complex queries. For example,

```
SQL> CREATE TABLE Users (
  2        UserID number(6) PRIMARY KEY,
  3        UserName VARCHAR(50),
  4        Pass VARCHAR(50) ,
  5        Email VARCHAR(100) ,
  6        DateOfBirth varchar(30)
  7  );

Table created.
```

```
SQL> CREATE TABLE Hotels (
  2       HotelID NUMBER(6) PRIMARY KEY,
  3       HotelName VARCHAR2(50),
  4       Location VARCHAR2(50),
  5       Description VARCHAR2(100),
  6       Rating NUMBER(2,1),
  7       ContactInfo VARCHAR2(30)
  8  );

Table created.
```

```
SQL> CREATE TABLE Bookings (
  2      BookingID NUMBER(6) PRIMARY KEY,
  3      UserID NUMBER(6),
  4      RoomID NUMBER(6),
  5      CheckInDate DATE,
  6      CheckOutDate DATE,
  7      NumberOfGuests NUMBER(6),
  8      BookingDate DATE,
  9      BookingStatus VARCHAR2(10),
 10      FOREIGN KEY (UserID) REFERENCES Users(UserID),
 11      FOREIGN KEY (RoomID) REFERENCES Rooms(RoomID)
 12  );

Table created.
```

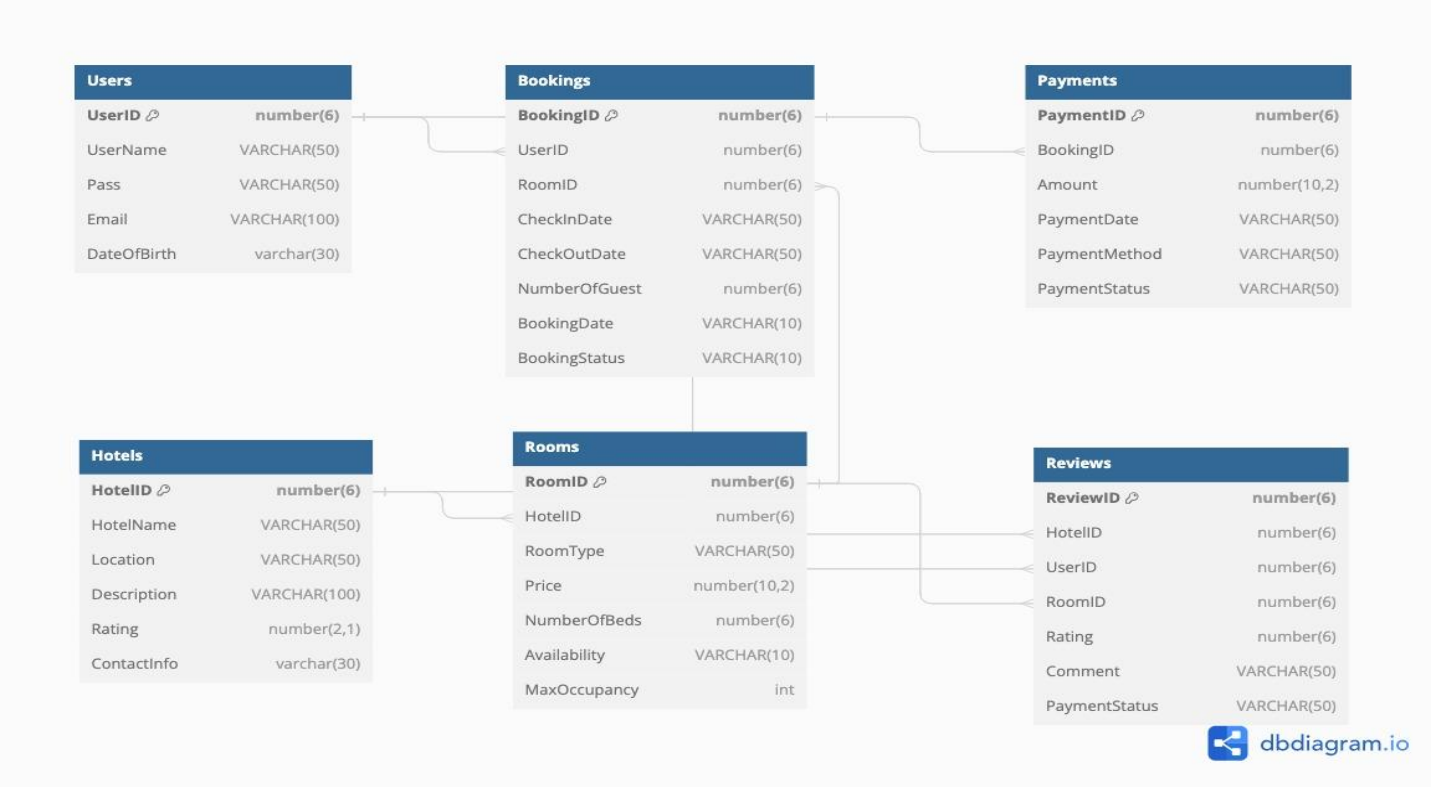
```
SQL> CREATE TABLE Payments (
  2      PaymentID NUMBER(6) PRIMARY KEY,
  3      BookingID NUMBER(6),
  4      Amount NUMBER(10,2),
  5      PaymentDate DATE,
  6      PaymentMethod VARCHAR2(50),
  7      PaymentStatus VARCHAR2(50),
  8      FOREIGN KEY (BookingID) REFERENCES Bookings(BookingID)
  9  );

Table created.
```

```
SQL> CREATE TABLE Reviews (
  2      ReviewID NUMBER(6) PRIMARY KEY,
  3      HotelID NUMBER(6),
  4      UserID NUMBER(6),
  5      Rating NUMBER(3,1),
  6      Feedback VARCHAR2(255),
  7      FOREIGN KEY (HotelID) REFERENCES Hotels(HotelID),
  8      FOREIGN KEY (UserID) REFERENCES Users(UserID)
  9  );

Table created.
```

Entity-Relationship Diagram (ERD)



SQL Queries and Functionality

Examples of SQL Queries

Here are examples illustrating common queries used in the OHBMS:

Retrieve Room Details:

SELECT * FROM Room WHERE hotel_id = 'HotelID';

Customer Booking Information:

SELECT customer_name, check_in_date, room_type FROM Booking JOIN Customer ON Booking.customer_id = Customer.customer_id WHERE Customer.customer_id = 'XYZ';

Find all hotels in a specific location:

SELECT hotel_name, location, contact_info FROM Hotel WHERE location LIKE '%LocationName%';

List all bookings scheduled after May 1, 2024:

SELECT * FROM Booking WHERE check_in_date > TO_DATE('2024-05-01', 'YYYY-MM-DD');

Queries for Common Operations

The database supports various operations essential for managing hotel booking data:

Search for Hotel by Name:

SELECT * FROM Hotel WHERE hotel_name LIKE '%hotel%';

List All Rooms by Type:

SELECT * FROM Room WHERE room_type = 'RoomType' ORDER BY price;

How to rename the column 'room_type' to 'type' in the Room table:

ALTER TABLE Room RENAME COLUMN room_type TO type;

What is the average price of all rooms offered:

SELECT AVG(price) AS Average_Price FROM Room;

Targeted Customers/Users

For your Online Hotel Booking Management System (OHBMS), identifying and understanding the targeted customers or user groups is crucial for customizing the system's features and functionalities to effectively meet their needs. Here are some key targeted customer segments for your OHBMS:

- **Individual Travelers:** This segment includes solo travelers who seek a straightforward way to plan and book accommodations. The OHBMS offers a user-friendly interface for them to explore various hotels, check room availability, and make reservations tailored to their travel preferences.

- **Families and Groups:** Families and group travelers often require accommodations that can host multiple individuals and may need multiple rooms or special arrangements. The OHBMS supports group bookings and provides options for connecting rooms, family discounts, and customized booking packages to cater to their varied needs.

- **Business Travelers:** Business travelers prioritize convenience, efficiency, and high connectivity. The OHBMS caters to this segment by offering hotels with business-friendly amenities, such as conference rooms, high-speed internet, and central

locations near commercial districts. Features like streamlined booking processes and detailed invoicing support efficient trip management and expense tracking.

- **Event Planners:** This group includes wedding planners, event organizers, and others who require booking large blocks of rooms or event spaces. The OHBMS provides tools to handle complex bookings, negotiate rates, and coordinate between multiple parties to facilitate smooth event planning.

- **Tour and Travel Agencies:** Agencies that book accommodations in bulk for tours or packages use OHBMS to manage multiple bookings, track availability, and negotiate rates with hotels directly through the system.

Conclusion

Reflection on Achievements and Challenges

Throughout the development of OHBMS, significant milestones include the integration of advanced SQL functionalities and sophisticated database management strategies. The challenges of maintaining data consistency and ensuring system scalability have been addressed through strict data validation methods and ongoing performance enhancements.

Significance of the Database in the Hotel Booking Industry

The OHBMS serves as a pivotal tool by providing a reliable and extensive database for hotel data, enhancing the booking process and enriching the overall user experience. It supports professionals in managing detailed accommodation logistics and offers travelers a dependable platform for organizing their stays.

References:

- Online Hotel Booking - Wikipedia
- Online Hotel Booking Management Research Project Examples - Hotel Teacher
- MSCSE_Project_Document(Md. Nazmul Hasan).pdf (uiu.ac.bd)
- Online ERD Tool (dbdiagram.io)