

Scenario:

Consider a hotel chain (Pearl Continental) with multiple properties across different cities. Each property has its own set of rooms, amenities, and staff. The hotel management database is designed to streamline operations, manage reservations, track guest preferences, and optimize resource allocation. Furthermore hotel has the following basic functionality:

- Guests can book rooms online, over the phone, or in person. The system captures reservation details such as guest information, check-in/check-out dates, room preferences, special requests, and payment information.
- The database maintains a record of all rooms available in each hotel property. This includes details like room type (single, double, suite), room number, occupancy capacity, amenities available in each room, and current availability status.
- For each guest, the system creates a profile containing personal details, contact information, preferences (e.g., room type, floor level, smoking/non-smoking), past reservation history, loyalty program membership, and any special requirements or notes.
- Staff members are assigned roles such as front desk receptionists, housekeeping, maintenance, and managerial positions. The database stores employee information including names, contact details, job titles, work schedules, performance evaluations, and payroll data.
- The system tracks inventory levels for items such as toiletries, linens, towels, and cleaning supplies. It automatically generates purchase orders when stock levels fall below a predefined threshold to ensure adequate supplies are maintained at all times.
- Upon check-out, the system calculates the total bill based on room rates, additional services availed (e.g., room service, spa treatments), and any applicable taxes or fees. Guests can settle their bills using various payment methods (cash, credit/debit cards, vouchers), and the database records payment details for accounting purposes.
- Housekeeping staff receive schedules indicating which rooms need to be cleaned, restocked, or serviced each day. The system optimizes cleaning routes to minimize time and resources while ensuring all rooms are maintained to the required standards.
- Guests are invited to provide feedback and ratings after their stay. The database aggregates this information to identify areas for improvement and recognize exceptional service. Guest reviews may also influence future booking decisions for prospective guests.

- The database implements security measures to protect sensitive data and restrict access to authorized personnel only. Role-based access controls ensure that staff members can only view or modify data relevant to their job responsibilities.
- Hotel management can generate reports and analyze data to gain insights into occupancy rates, revenue trends, guest demographics, marketing effectiveness, and operational efficiency. This information helps in making informed decisions to optimize hotel performance and enhance guest satisfaction.

Task 1: As a database administrator your job is to task your team to create ER diagram on these three levels using natural language mapping process

Level 1: Conceptual ERD

Level 2: Logical ERD

Level 3: Physical ERD

Task 2: Once you have physical ERD, use MySQL workbench (recommended) or any other tool to perform forward engineering.