HOTEL MANAGEMENT SYSTEM

DATA MANAGEMENT AND DATABASE DESIGN

P2: Database Design
&
Conceptual Model
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TEAM 19

INTRODUCTION

The Hotel Management System project aims to streamline operational processes. It enhances guest experiences, attracts more business and controls costs.

It incorporates entities such as customers, hotel employees, parking, room services etc. to improve the efficiency of hotel staff and service quality for guests.

The system is designed to simplify hotel operations, improve customer service, and provide centralized control over various services, including customer profiles, room services, parking, dining etc. It reduces wait time, improves managerial efficiency and increases customer satisfaction within a specific budget and timeline measuring success by user feedback, performance metrics and deployment efficiency.

Business Problems and Objectives:

The database design addresses numerous business problems such as

1. **Operational Streamlining:** The database aims to provide an ease to the management tasks for the hotel staff by providing smooth workflows within the system.
2. **Enhancement of Guest Experience:** The database seeks to minimize wait times at hotel desks. It offers quick issue resolutions and provides an efficient service.
3. **Attract More Business:** With the help of centralization of management, the system gives customers a comprehensive view of all aspects associated with the stay of hotel customers.
4. **Cost Control:** the database implements measures to reduce wastage and optimizes resources use without compromising on quality.

Entities

The database includes the following key entities,

1. **Customer**: This entity stores customer information of individuals who use the hotel's services. It is linked to reservations, amenity usage and payments enabling personalized services.
2. **Employee**: This entity consists of data on hotel staff. It includes details like name, contact information, designation and address. The employees are responsible for managing reservations, providing room service and managing parking.
3. **Reservation**: This entity holds the booking details of the customers, including aspects like check-in and check-out details and is linked to specific room types.
4. **Room Service**: This entity is used to represent orders placed by guests. It includes details such as employee who took the order, the food items ordered and the room and customer details to which the order has to be delivered.
5. **Transaction**: This entity tracks all financial tractions within the hotel, with details on the traction type and amount.
6. **Amenities**: This entity is used to store the details of the amenities available in the hotel such as the gym, pool etc. It includes the location of the amenity in the hotel.

7. **Parking**: This entity stores the parking related information. Such as the parking number and the employee managing the parking area.
8. **Restaurant**: This entity is used to capture the details of the restaurant orders. Includes details such as the server's name table number and the financial details like the amount to be charged for the orders made.
9. **Hotel**: This entity is central to the database, holding relationships with customers, events, and employees, enabling the hotel to organize events, maintain customer service, and manage staff.
10. **Events**: This entity details the various events hosted by the hotel, such as conferences or weddings. The Events entity is critical for the hotel to track and manage the numerous events that take place within its premises.

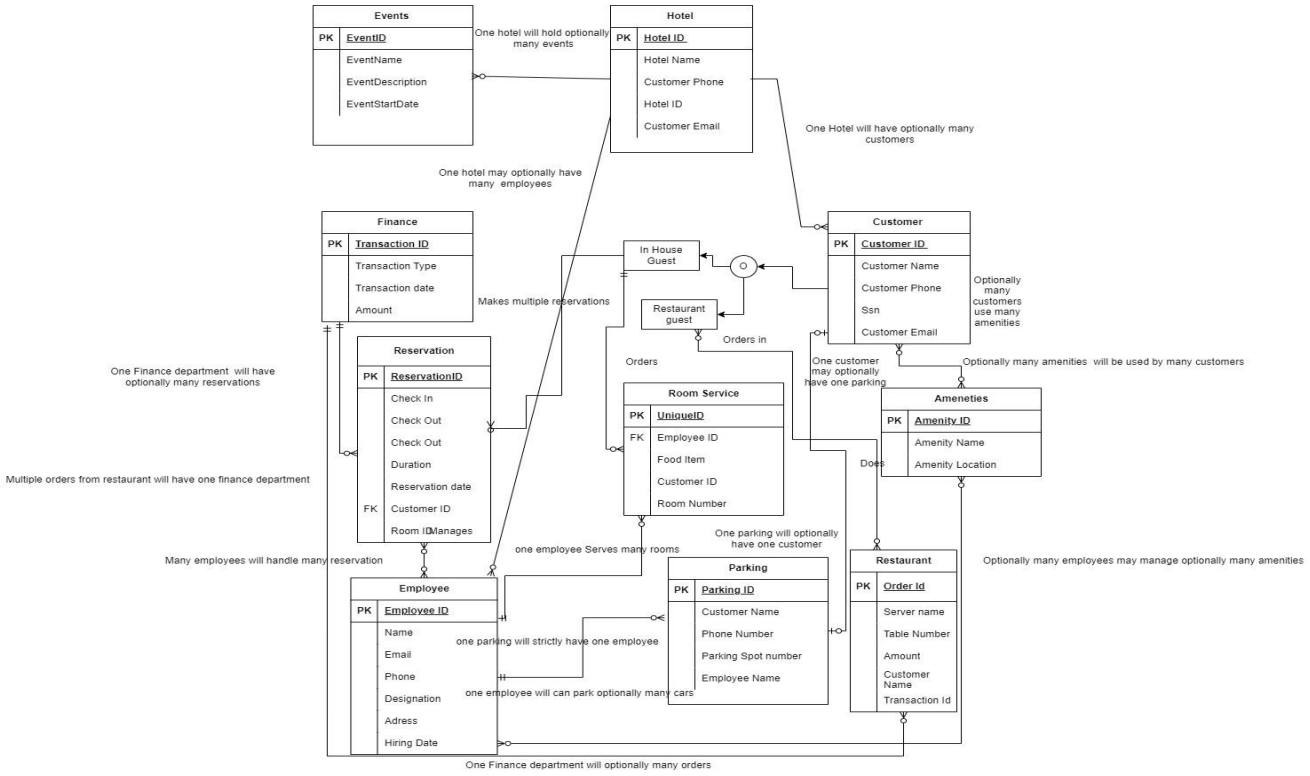
These entities are all interconnected to show how the operations such as room services, parking and restaurant services are related to both employees and customers with finance tracking abilities for all the monetary aspects.
The is used to reflect the system to manage hotel operations in an efficient manner and provides an enhanced guest experience.

Relationships and Cardinality

1. **Hotel to Events**: A one-to-many relationship, as a hotel can host multiple events.
2. **Hotel to Customer**: A one-to-many relationship, as a hotel can serve multiple customers.
3. **Hotel to Employee:** A one-to-many relationship, as a hotel can have multiple employees.
4. **Customer to Reservation**: A one-to-many relationship since customers can make multiple reservations.
5. **Customer to Restaurant**: A many-to-many relationship, as multiple customers can place multiple orders at the Restaurant.
6. **Reservation to Finance**: A many-to-one relationship as only one transaction id will be generated for one reservation similarly transaction will be done for many reservation
7. **Employee to Reservation**: A many-to-many relationship because multiple employees can manage multiple reservations based on their roles.
8. **Employee to Room Service**: A one-to-many relationship as one employee can serve multiple room service orders.
9. **Room Service to Customer**: A many-to-one relationship since multiple room service orders can be made by a single customer during their stay.
10. **Employee to Parking**: A one-to-many relationship, with one employee managing multiple parking spots. one parking spot will be associated always with one employee.
11. **Parking to Customer**: A one-to-one relationship because a customer can use a single designated parking spot. Similarly, a parking spot can be associated at a time with one customer
12. **Restaurant to Finance**: One to Many order in a restaurant will have only onetransaction id but finance will have multiple orders

13. **Customer to Amenities**: A many-to-many relationship, as customers can use multiple amenities and amenities can be used by multiple customers.
14. **Employee to Amenities**: A many-to-many relationship, as multiple employees can provide/ offer multiple amenities.

ERD DIAGRAM



Key Design Considerations

1. **Modular approach:** The design allows integration of various areas within the system to facilitate te potential of including additional features in future.

2. **Operational Streamlining:** It is structured to provide an ease to the management tasks for hotel staff.

3. **Business Attraction:** With a centralized management system we offer the customers a comprehensive view of all services associated with their stay.

4. **Cost Control:** The design allows to incorporate measures for reducing wastage and optimizing resources without compromising the quality of services being provided.

5. **Centralized Control:** It aims to simply the hotel complex operations. Aims to improve customer services and offer a centralized control over services such as customer profiles room services, parking etc.

Conclusion

Our database design focuses on various aspects such as operational efficiency, guest experience and aims at streamlining the management process.
It incorporates entities that reflect the complex nature of the hotels and hotel management from booking rooms to event management and is aimed at providing a seamless experience for both guests and staff.
The is critical for successful administration of hotel operations, ensuring customer satisfaction and operational success.