HOTEL MANAGEMENT SYSTEM

DATA MANAGEMENT AND DATABASE DESIGN

P3: Final ERD
(Logical Model)
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TEAM 19

Logical Model

Entities

The database includes the key entities like:

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. **Finance**: 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.

11. **Room**: This entity details the rooms in the hotel with attributes like RoomID (PK), Room No, Location and RoomType. Room can have multiple reservations and room service requests.

Associative Entities:

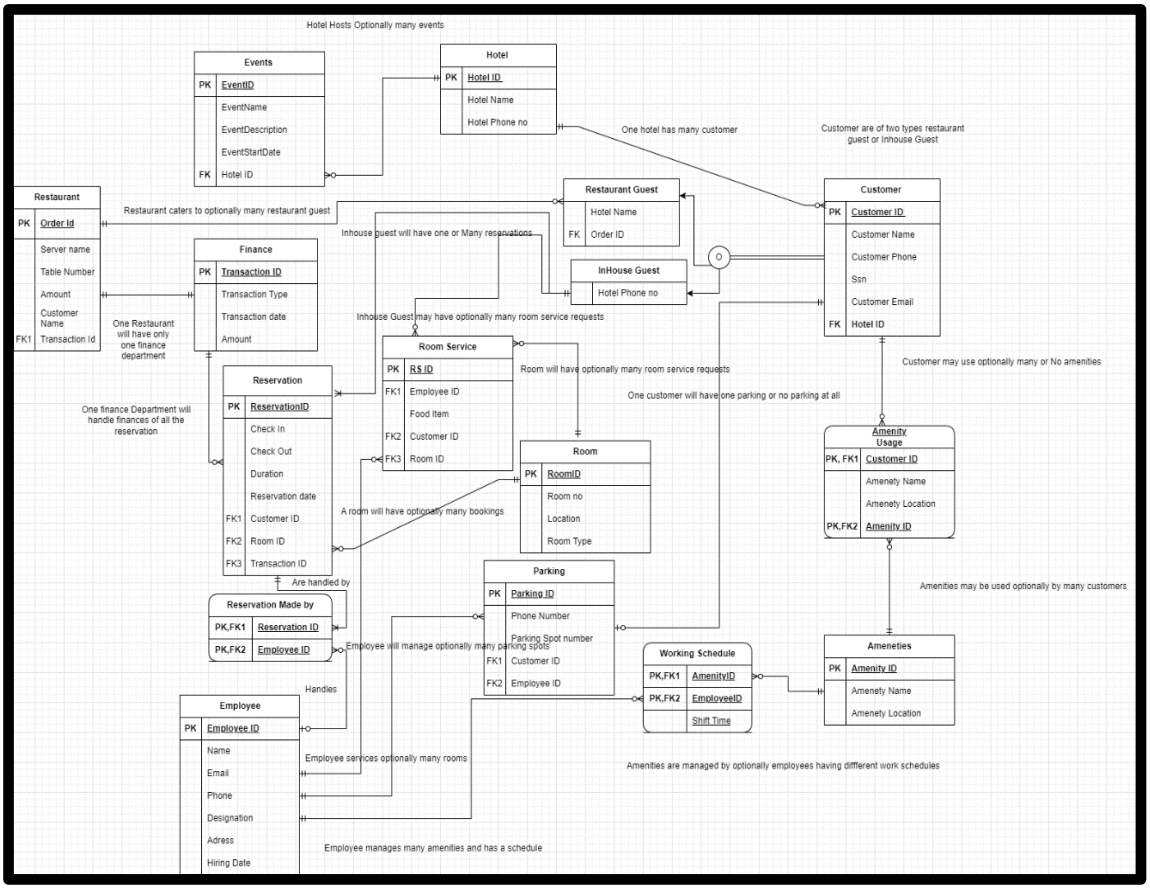
1. **Reservation Made by**: This entity links reservations with the employees who handle them and includes attributes like ReservationID and EmployeeID
2. **Working Schedule**: This entity manages employees' work schedules and has attributes like AmenityID, EmployeeID and ShiftTime.
3. **Amenity Usage**: This entity links Customer entity with the Amenities. It has attributes like Amenity Name, Amenity Location and Amenity ID

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. **Finance to Reservation**: A one-to-many relationship as one finance department will handle all the reservation.
4. **Employee to Reservation**: Linked by an associative entity Reservation Made by.
5. **Employee to Room Service**: A one-to-many relationship as one employee can serve multiple room service orders.
6. **Employee to Parking**: A one-to-many relationship, with one employee managing multiple parking spots.
7. **Parking to Customer**: A one-to-one relationship because a customer can use a single designated parking spot.
8. **Restaurant to Finance**: A one-to-one relationship since one restaurant will have only one finance department.
9. **Customer to Amenities**: Linked by an associative entity – Amenity Usage
10. **Employee to Amenities**: Linked by associative entity – Working Schedule
11. **Customer to Restaurant Guest & Inhouse Guest:** Customer is a specialization and Restaurant guest and Inhouse guest are its sub types with overlap rule.
12. **Restaurant to Restaurant Guest:** A one to many relationship as Restaurant caters to optionally many restaurant guests
13. **Reservation to Inhouse Guest:** A many to one relationship since inhouse guest can have one or many reservations.

14. **Room Service to Inhouse Guest:** A many to one relationship since an in house guest can make multiple room service requests.
15. **Room Service to Room:** A many to one relationship as one room can make multiple room service requests.
16. **Room to Reservation:** A one to many relationship as one room can optionally have many bookings

ERD DIAGRAM



Conclusion

As per the feedback from professor in P2 We have added the room entity and cleaned up the room service entity. We have reduced redundant fields like customer name and employee name from parking. We have removed all Many-to-Many relationships, Composite attributes, and multivalued attributes. We have created associative entities there for Many-to-Many relationships and everything is in the 3NF form.