HOTEL MANAGEMENT DATABASE SYSTEM

Hotel management operations generate large quantities of data such as reservations, guest information, financial records, availability of rooms, and staff details. This data should be readily accessible to hotel staff to enable quick and efficient data retrieval to meet customer requirements and ensure the smooth operation of the hotel. Information such as room availability, occupancy status, and maintenance schedules is essential to prevent errors when maintaining guest records, reservations, and billing.

An efficient database system would enable storage of data in an organized manner making it easy to categorize and access such information while also providing a structured and efficient method to manage this data. Database systems can be designed to be scaled efficiently to accommodate large amounts of data while ensuring the data is accurate, reliable, and up-to-date.

DATABASE DESIGN

ENTITIES

1. **Hotel:** Represents the hotel
   Attributes: HotelID(PK), Hotel_name, Hotel_location, Hotel_website
2. **Customer**: Represents the guests checking into the hotel
   Attributes: CustomerID(PK), Customer_name, Customer_email, Customer_phone
3. **Booking**: Represents the reservations made by the customers for the rooms in the hotel
   Attributes: BookingID(PK), Checkin_date, Checkout_date, Number of guests
4. **Employee**: Represents the hotel employees
   Attributes: EmployeeID(PK), HotelID(FK), Employee_name, Employee_join_date
5. **Package**: Represents the stay packages offered by the hotel to the customers
   Attributes: PackageID(PK), Package_name, Package_description, Package_price
6. **Room**: Represents the rooms in the hotels
   Attributes: RoomID(PK), Room_type, Bed_type, amenities
7. **Facilities**: Represents the facilities offered by the hotel to the customer
   Attributes: FacilityID(PK), Facility_name, Description, Location, Total_occupancy
8. **Payment**: Represents payment made by the customer for the reservation
   Attributes: PaymentID(PK), Payment_amount, name, Payment_type, Payment_date
9. **Service**: Represents the services offered by the hotel
   Attributes: ServiceID(PK), Service_name, Description, Type, Price

10. **Invoice**: Represents the invoices generated for the guests
    Attributes: InvoiceID(PK), Invoice_status, Invoice_description
11. **Review**: Represents the reviews made by the customers of the hotel
    Attributes: ReviewID(PK), CustomerID(FK), rating, comment

RELATIONSHIPS

1. **Hotel to Employee:** Mandatory One to Mandatory Many
   One Hotel can have multiple Employees while One Employee only works for One Hotel
2. **Hotel to Service:** Mandatory Many to Mandatory Many
   One Hotel can provide many Services and One Service can be provided by more than One Hotel
3. **Hotel to Room:** Mandatory One to Mandatory Many
   One Hotel have many Rooms while One Room can only belong to Specific Hotel
4. **Hotel to Package:** Mandatory Many to Optional Many
   One Hotel may or may not offer any Package but a Package must be offered by at least One Hotel
5. **Employee to Room:** Mandatory One to Mandatory Many
   One Employee manages more than one Room while One Room should be managed by only One Employee
6. **Employee to Booking:** Mandatory One to Mandatory Many
   One Employee administrates many Bookings while One Booking can only be managed by One Employee
7. **Employee to Service:** Mandatory One to Mandatory Many
   One Employee can be in charge of more than one services at a time while One Service can only looked after by One Employee
8. **Employee to Payment:** Mandatory One to Mandatory Many
   One Employee handles many Payments while One Payment can only be handled by One Employee
9. **Employee to Invoice:** Mandatory One to Mandatory Many
   One Employee generates more than One Invoices while One Invoice can only be prepared by One Employee

10. **Room to Facility:** Optional Many to Mandatory Many

    One Room does provides many Facilities while One Facility may or may not be supplied to every Room

11. **Booking to Package:** Mandatory Many to Optional Many

    Each Booking may or may not be intended for a Package, but One package can be booked many times

12. **Booking to Room:** Optional One to Mandatory Many

    One Booking can be done for multiple Rooms while Each Room may or may not be Booked by anyone.

13. **Booking to Customer:** Optional Many to Mandatory One

    Each Booking must be done by One Customer, while One Customer can reserve for zero to many Bookings.

14. **Customer to Service:** Mandatory Many to Mandatory Many

    One Customer book for Many Services at a time and One Service can be booked by Many Customers.

15. **Customer to Facility via Facility_Booking:** Optional Many to Optional Many

    One Customer may book for many Facilities or none While One Facility can be Booked by Zero or Many Customers.

16. **Customer to Review:** Mandatory One to Optional One

    One Customer can write upto One Review (Zero or One) and One Review Can Only be Written by One Customer

17. **Customer to Payment:** Mandatory One to Optional Many

    One Customer can make zero to Many Payments while Each Payment can be done by only One Customer.

18. **Payment to Invoice:** Mandatory One to Mandatory Many

    One Payment has One Payment Invoice and One Payment Invoice is associated with One Payment only.