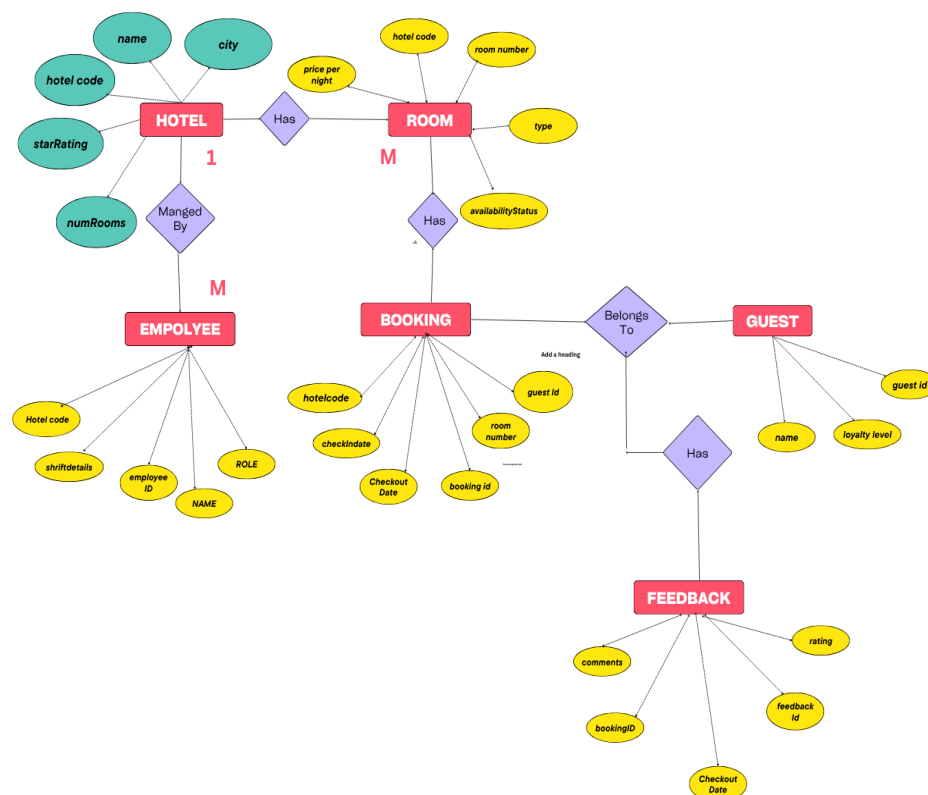# Problem: 4 Multi-city Hotel Chain Management System

Design an Entity-Relationship schema for a multi-city hotel chain management system. The database must maintain hotels identified by hotel code, name, city, manager, number of rooms, and star rating. Rooms have room number, type, price per night, availability status, and belong to a hotel.

Guests have guest ID, name, loyalty level, booking history, and feedback given for bookings. Bookings have booking ID, guest, room, check-in and check-out dates, and total bill. Employees have employee ID, name, role, hotel assigned, and shift details.

Each hotel has multiple rooms and employees, and is managed by a manager who is also an employee. Guests can book rooms in any hotel and can have multiple active or past bookings. Rooms can be booked by different guests over time, but only one guest can occupy a room at a given time.

Employees are assigned to a specific hotel and can work in different shifts and roles. Loyalty level of a guest is updated based on their booking history and feedback. Feedback is linked to specific bookings and can influence loyalty level updates.



## SQL Table Creation Statements:

## 1. **Hotel** Table

```sql
CREATE TABLE Hotel (
    HotelCode VARCHAR(10) PRIMARY KEY,
    Name VARCHAR(100),
    City VARCHAR(50),
    StarRating INT,
    NumRooms INT,
    ManagerID VARCHAR(10) -- FK to Employee
);
```

## 2. Room Table

```sql
CREATE TABLE Room (
    RoomNumber INT,
    HotelCode VARCHAR(10),
    Type VARCHAR(20),
    Price PerNight DECIMAL(10,2),
    AvailabilityStatus VARCHAR(10),
    PRIMARY KEY (RoomNumber, HotelCode),
    FOREIGN KEY (HotelCode) REFERENCES Hotel(HotelCode)
);
```

## 3. Guest Table

```sql
CREATE TABLE Guest (
    GuestID VARCHAR(10) PRIMARY KEY,
    Name VARCHAR(100),
    LoyaltyLevel VARCHAR(20)
);
```

## 4. Booking Table

```sql
CREATE TABLE Booking (
    BookingID VARCHAR(10) PRIMARY KEY,
    GuestID VARCHAR(10),
    RoomNumber INT,
    HotelCode VARCHAR(10),
    CheckInDate DATE,
```

```sql
    CheckOutDate DATE,
    TotalBill DECIMAL(10,2),
    FOREIGN KEY (GuestID) REFERENCES Guest(GuestID),
    FOREIGN KEY (RoomNumber, HotelCode) REFERENCES Room(RoomNumber,
HotelCode)
);
```

## 5. Feedback Table

sql
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```sql
CREATE TABLE Feedback (
    FeedbackID VARCHAR(10) PRIMARY KEY,
    BookingID VARCHAR(10),
    Rating INT,
    Comments TEXT,
    FOREIGN KEY (BookingID) REFERENCES Booking(BookingID)
);
```

## 6. Employee Table

```sql
CREATE TABLE Employee (
    EmployeeID VARCHAR(10) PRIMARY KEY,
    Name VARCHAR(100),
    Role VARCHAR(50),
    HotelCode VARCHAR(10),
    ShiftDetails VARCHAR(20),
    FOREIGN KEY (HotelCode) REFERENCES Hotel(HotelCode)
);

/* === DATA INSERTS ========================================= */

INSERT INTO Hotel VALUES
('H001', 'Grand Regency', 'Mumbai', 5, 120, 'E001'),
('H002', 'Ocean View', 'Chennai', 4, 80, 'E005'),
('H003', 'Hilltop Haven', 'Shimla', 3, 60, 'E009');


INSERT INTO Room VALUES
(101, 'H001', 'Deluxe', 4500.00, 'Available'),
(102, 'H001', 'Suite', 7000.00, 'Booked'),
```

```sql
(201, 'H002', 'Standard', 3000.00, 'Available'),
(202, 'H002', 'Suite', 6500.00, 'Booked'),
(301, 'H003', 'Standard', 2800.00, 'Available');


INSERT INTO Guest VALUES
('G001', 'Aarav Sharma', 'Gold'),
('G002', 'Meera Iyer', 'Silver'),
('G003', 'Karan Verma', 'Bronze');


INSERT INTO Booking VALUES
('B001', 'G001', 102, 'H001', '2025-06-01', '2025-06-05', 28000.00),
('B002', 'G002', 202, 'H002', '2025-05-20', '2025-05-22', 13000.00),
('B003', 'G003', 301, 'H003', '2025-06-10', '2025-06-12', 5600.00);


INSERT INTO Feedback VALUES
('F001', 'B001', 5, 'Excellent stay and great service!'),
('F002', 'B002', 4, 'Clean rooms and good location.'),
('F003', 'B003', 3, 'Decent but can improve on food.');

INSERT INTO Employee VALUES
('E001', 'Ravi Malhotra', 'Manager', 'H001', 'Morning'),
('E002', 'Anita Desai', 'Receptionist', 'H001', 'Evening'),
('E005', 'Sunil Menon', 'Manager', 'H002', 'Morning'),
('E006', 'Pooja Reddy', 'Cleaner', 'H002', 'Night'),
('E009', 'Tina Kapoor', 'Manager', 'H003', 'Morning');
```

## room
- 🔑 RoomNumber INT
- 🔑 HotelCode VARCHAR(10)
- ◇ Type VARCHAR(20)
- ◇ PricePerNight DECIMAL(10,2)
- ◇ AvailabilityStatus VARCHAR(1...
- Indexes ▶

## employee
- 🔑 EmployeeID VARCHAR(1...
- ◇ Name VARCHAR(100)
- ◇ Role VARCHAR(50)
- ◇ HotelCode VARCHAR(10)
- ◇ ShiftDetails VARCHAR(20)
- Indexes ▶

## feedback
- 🔑 FeedbackID VARCHAR(1...
- ◇ BookingID VARCHAR(10)
- ◇ Rating INT
- ◇ Comments TEXT
- Indexes ▶

## booking
- 🔑 BookingID VARCHAR(1...
- ◇ GuestID VARCHAR(10)
- ◇ RoomNumber INT
- ◇ HotelCode VARCHAR(10)
- ◇ CheckInDate DATE
- ◇ CheckOutDate DATE
- ◇ TotalBill DECIMAL(10,2)
- Indexes ▶

## hotel
- 🔑 HotelCode VARCHAR(10)
- ◇ Name VARCHAR(100)
- ◇ City VARCHAR(50)
- ◇ StarRating INT
- ◇ NumRooms INT
- ◇ ManagerID VARCHAR(1...
- Indexes ▶

## guest
- 🔑 GuestID VARCHAR(10)
- ◇ Name VARCHAR(100)
- ◇ LoyaltyLevel VARCHAR(2...
- Indexes ▶