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.

Creating tables …

Hotel …

```
CREATE TABLE Hotel (
    hotel_code VARCHAR(10) PRIMARY KEY,
    name VARCHAR(100) NOT NULL,
    city VARCHAR(100) NOT NULL,
    manager_id INT UNIQUE,  -- One-to-one with Employee
    number_of_rooms INT CHECK (number_of_rooms >= 0),
    star_rating INT CHECK (star_rating BETWEEN 1 AND 5)
);
```

Room …

```
CREATE TABLE Room (
    room_id INT PRIMARY KEY AUTO_INCREMENT,
    hotel_code VARCHAR(10),
    room_number VARCHAR(10),  -- unique per hotel
    type VARCHAR(50),
    price_per_night DECIMAL(10, 2),
    availability_status ENUM('available', 'booked') DEFAULT 'available',
    FOREIGN KEY (hotel_code) REFERENCES Hotel(hotel_code),
    UNIQUE (hotel_code, room_number)
);
```

Guest …

```
CREATE TABLE Guest (
    guest_id INT PRIMARY KEY AUTO_INCREMENT,
    name VARCHAR(100) NOT NULL,
    loyalty_level ENUM('Silver', 'Gold', 'Platinum') DEFAULT 'Silver'
);
```

Employee …

```
CREATE TABLE Employee (
    employee_id INT PRIMARY KEY AUTO_INCREMENT,
    name VARCHAR(100) NOT NULL,
```

```
    role VARCHAR(50),
    hotel_code VARCHAR(10),
    shift_details VARCHAR(100),
    FOREIGN KEY (hotel_code) REFERENCES Hotel(hotel_code)
);
```

Booking …

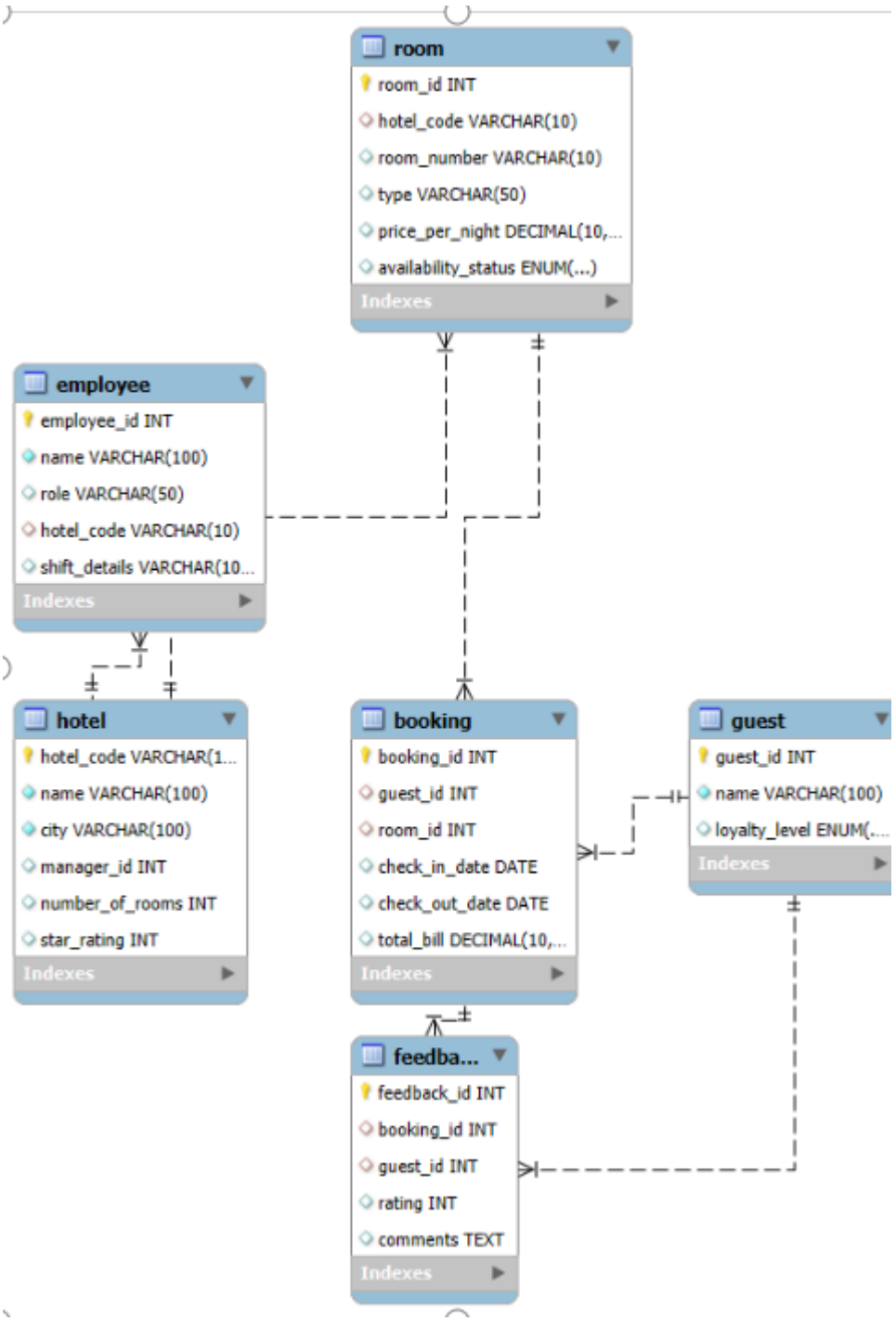
```
CREATE TABLE Booking (
    booking_id INT PRIMARY KEY AUTO_INCREMENT,
    guest_id INT,
    room_id INT,
    check_in_date DATE,
    check_out_date DATE,
    total_bill DECIMAL(10, 2),
    FOREIGN KEY (guest_id) REFERENCES Guest(guest_id),
    FOREIGN KEY (room_id) REFERENCES Room(room_id),
    CONSTRAINT chk_dates CHECK (check_in_date < check_out_date)
);
```

Feedback …

```
CREATE TABLE Feedback (
    feedback_id INT PRIMARY KEY AUTO_INCREMENT,
    booking_id INT UNIQUE,  -- One-to-one with Booking
    guest_id INT,
    rating INT CHECK (rating BETWEEN 1 AND 5),
```

```
    comments TEXT,
    FOREIGN KEY (booking_id) REFERENCES Booking(booking_id),
    FOREIGN KEY (guest_id) REFERENCES Guest(guest_id)
);
```

ER DIAGRAM …


room
room_id INT
hotel_code VARCHAR(10)
room_number VARCHAR(10)
type VARCHAR(50)
price_per_night DECIMAL(10,...
availability_status ENUM(...)
Indexes
employee
employee_id INT
name VARCHAR(100)
role VARCHAR(50)
hotel_code VARCHAR(10)
shift_details VARCHAR(10...
Indexes
hotel
hotel_code VARCHAR(1...
name VARCHAR(100)
city VARCHAR(100)
manager_id INT
number_of_rooms INT
star_rating INT
Indexes
booking
booking_id INT
guest_id INT
room_id INT
check_in_date DATE
check_out_date DATE
total_bill DECIMAL(10,...
Indexes
guest
guest_id INT
name VARCHAR(100)
loyalty_level ENUM(...
Indexes
feedba...
feedback_id INT
booking_id INT
guest_id INT
rating INT
comments TEXT
Indexes