

Department of Electrical & Electronics Engineering
National Institute of Technology, Warangal



DBMS PROJECT
Hotel Booking System

PREPARED BY-

Ankul Gupta (22EEB0A22)

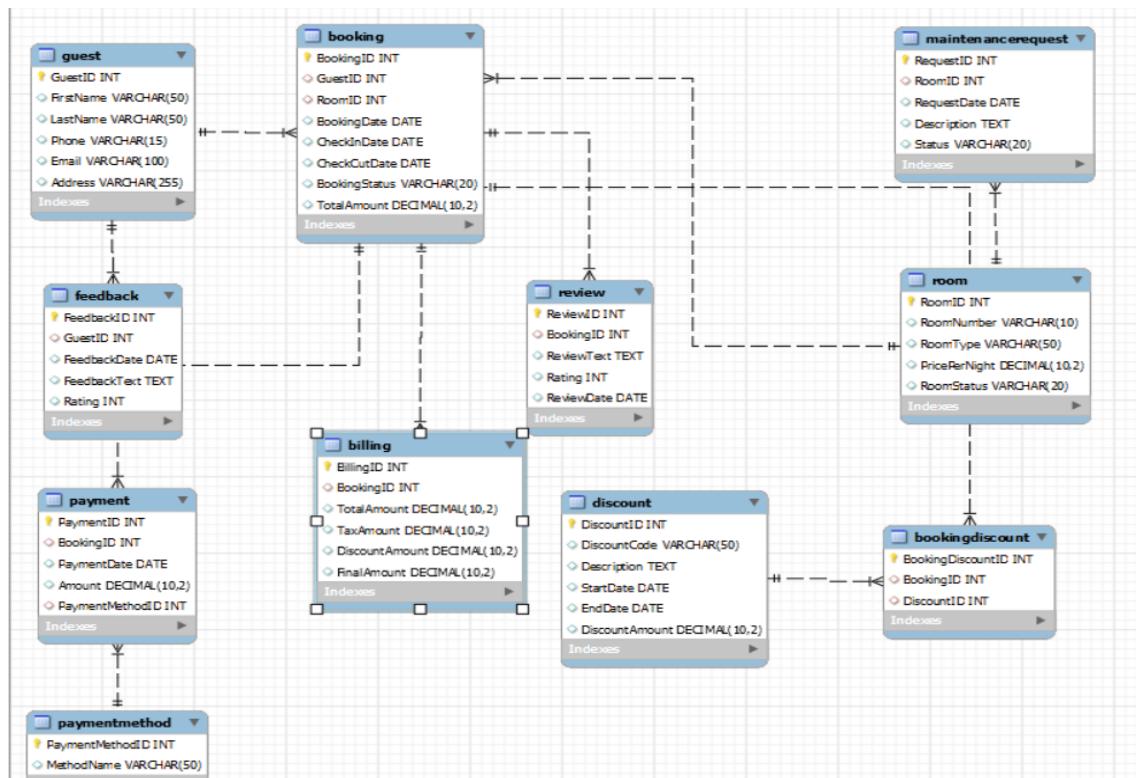
B.TECH EEE-A

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PROBLEM STATEMENT

1. **Guest Details:** Store personal information such as name, phone number, email address, and address for each guest..
2. **Booking History:** Maintain records of all bookings, including booking dates, check-in/check-out dates, room numbers, and booking statuses (confirmed/cancelled)
3. **Room Information:** Manage details for each room, including room numbers, types (e.g., standard, deluxe), prices per night, and current statuses (available, occupied)
4. **Payment Methods:** This includes the available payment methods for guests, such as credit/debit card, net banking, cash, etc.
5. **Discounts and Offers:** Implement discount codes and special offers for bookings, including descriptions, validity periods, and discount amounts.
6. **Maintenance Requests:** Manage maintenance requests for rooms, including request dates, descriptions of issues, statuses (pending, completed), and associated rooms.

Relational MODEL



Relational Diagram Explanation

1. *Guest*

- **Table Name:** Guest
- **Primary Key:** GuestID
- **Attributes:**
 - GuestID (INT, AUTO_INCREMENT)
 - FirstName (VARCHAR(50))
 - LastName (VARCHAR(50))
 - Phone (VARCHAR(15))
 - Email (VARCHAR(100))
 - Address (VARCHAR(255))

Explanation:

This table stores information about the guests who book rooms in the hotel. Each guest has a unique ID, along with their personal details like name, phone number, email, and address.

2. *Room*

- **Table Name:** Room
- **Primary Key:** RoomID
- **Attributes:**
 - RoomID (INT, AUTO_INCREMENT)
 - RoomNumber (VARCHAR(10))
 - RoomType (VARCHAR(50))
 - PricePerNight (DECIMAL(10, 2))
 - RoomStatus (VARCHAR(20))

Explanation:

This table stores details of each room in the hotel. It includes the room number, type (e.g., standard, deluxe), price per night, and current status (e.g., available, occupied).

3. *Booking*

- **Table Name:** Booking
- **Primary Key:** BookingID
- **Foreign Keys:** GuestID references Guest(GuestID), RoomID references Room(RoomID)
- **Attributes:**
 - BookingID (INT, AUTO_INCREMENT)
 - GuestID (INT)

- RoomID (INT)
- BookingDate (DATE)
- CheckInDate (DATE)
- CheckOutDate (DATE)
- BookingStatus (VARCHAR(20))
- TotalAmount (DECIMAL(10, 2))

Explanation:

This table stores the booking information for guests. Each booking links to a guest and a room and includes details such as booking date, check-in and check-out dates, status, and the total amount to be paid.

4. *PaymentMethod*

- **Table Name:** PaymentMethod
- **Primary Key:** PaymentMethodID
- **Attributes:**
 - PaymentMethodID (INT, AUTO_INCREMENT)
 - MethodName (VARCHAR(50))

Explanation:

This table lists the different payment methods available for guests to use, such as credit card, debit card, and cash.

5. *Payment*

- **Table Name:** Payment
- **Primary Key:** PaymentID
- **Foreign Keys:** BookingID references Booking(BookingID), PaymentMethodID references PaymentMethod(PaymentMethodID)
- **Attributes:**
 - PaymentID (INT, AUTO_INCREMENT)
 - BookingID (INT)
 - PaymentDate (DATE)
 - Amount (DECIMAL(10, 2))
 - PaymentMethodID (INT)

Explanation:

This table stores the payment transactions for bookings. It includes the booking ID, payment date, amount paid, and the payment method used.

6. Review

- **Table Name:** Review
- **Primary Key:** ReviewID
- **Foreign Keys:** BookingID references Booking(BookingID)
- **Attributes:**
 - ReviewID (INT, AUTO_INCREMENT)
 - BookingID (INT)
 - ReviewText (TEXT)
 - Rating (INT)
 - ReviewDate (DATE)

Explanation:

This table captures reviews and ratings given by guests for their bookings. Each review is linked to a specific booking and includes the review text, rating, and the date of the review.

7. Discount

- **Table Name:** Discount
- **Primary Key:** DiscountID
- **Attributes:**
 - DiscountID (INT, AUTO_INCREMENT)
 - DiscountCode (VARCHAR(50))
 - Description (TEXT)
 - StartDate (DATE)
 - EndDate (DATE)
 - DiscountAmount (DECIMAL(10, 2))

Explanation:

This table stores discount codes available for use during bookings. It includes the discount code, description, start and end dates for the validity of the discount, and the discount amount.

8. BookingDiscount

- **Table Name:** BookingDiscount
- **Primary Key:** BookingDiscountID
- **Foreign Keys:** BookingID references Booking(BookingID), DiscountID references Discount(DiscountID)
- **Attributes:**

- BookingDiscountID (INT, AUTO_INCREMENT)
- BookingID (INT)
- DiscountID (INT)

Explanation:

This table links bookings to discounts applied. Each entry represents a discount applied to a specific booking.

9. *MaintenanceRequest*

- **Table Name:** MaintenanceRequest
- **Primary Key:** RequestID
- **Foreign Keys:** RoomID references Room(RoomID)
- **Attributes:**
 - RequestID (INT, AUTO_INCREMENT)
 - RoomID (INT)
 - RequestDate (DATE)
 - Description (TEXT)
 - Status (VARCHAR(20))

Explanation:

This table records maintenance requests for rooms. Each request includes the room ID, request date, description of the issue, and the current status of the request.

10. *Billing*

- **Table Name:** Billing
- **Primary Key:** BillingID
- **Foreign Keys:** BookingID references Booking(BookingID)
- **Attributes:**
 - BillingID (INT, AUTO_INCREMENT)
 - BookingID (INT)
 - TotalAmount (DECIMAL(10, 2))
 - TaxAmount (DECIMAL(10, 2))
 - DiscountAmount (DECIMAL(10, 2))
 - FinalAmount (DECIMAL(10, 2))

Explanation:

This table stores the billing details for each booking. It includes the booking ID, total amount, tax amount, discount amount, and the final amount after applying discounts and taxes.

11. Feedback

- **Table Name:** Feedback
- **Primary Key:** FeedbackID
- **Foreign Keys:** GuestID references Guest(GuestID)
- **Attributes:**
 - FeedbackID (INT, AUTO_INCREMENT)
 - GuestID (INT)
 - FeedbackDate (DATE)
 - FeedbackText (TEXT)
 - Rating (INT)

Explanation:

This table stores feedback from guests. Each feedback entry includes the guest ID, date of feedback, feedback text, and a rating.

Functional Dependencies:

- GuestID → FirstName, LastName, Phone, Email, Address
- RoomID → RoomNumber, RoomType, PricePerNight, RoomStatus
- BookingID → GuestID, RoomID, BookingDate, CheckInDate, CheckOutDate, BookingStatus, TotalAmount
- GuestID, RoomID, BookingDate → BookingID
- PaymentMethodID → MethodName
- PaymentID → BookingID, PaymentDate, Amount, PaymentMethodID
- BookingID → PaymentID
- ReviewID → BookingID, ReviewText, Rating, ReviewDate
- BookingID → ReviewID
- DiscountID → DiscountCode, Description, StartDate, EndDate, DiscountAmount
- BookingDiscountID → BookingID, DiscountID
- BookingID → BookingDiscountID
- DiscountID → BookingDiscountID
- RequestID → RoomID, RequestDate, Description, Status
- RoomID, RequestDate → RequestID
- BillingID → BookingID, TotalAmount, TaxAmount, DiscountAmount, FinalAmount
- BookingID → BillingID
- FeedbackID → GuestID, FeedbackDate, FeedbackText, Rating
- GuestID → FeedbackID

Normalisation

I. Guest

- All attributes depend on the GuestID, hence the table is in 2NF.
- All attributes depend directly on GuestID, hence the table is in 3NF.
- All determinants (GuestID) are candidate keys, hence the table is in BCNF.

II. Room

- All attributes depend on the RoomID, hence the table is in 2NF.
- All attributes depend directly on RoomID, hence the table is in 3NF.
- All determinants (RoomID) are candidate keys, hence the table is in BCNF.

III. Booking

- All attributes depend on the BookingID, hence the table is in 2NF.
- All attributes depend directly on BookingID, hence the table is in 3NF.
- All determinants (BookingID) are candidate keys, hence the table is in BCNF.

IV. PaymentMethod

- All attributes depend on the PaymentMethodID, hence the table is in 2NF.
- All attributes depend directly on PaymentMethodID, hence the table is in 3NF.
- All determinants (PaymentMethodID) are candidate keys, hence the table is in BCNF.

V. Payment

- All attributes depend on the PaymentID, hence the table is in 2NF.
- All attributes depend directly on PaymentID, hence the table is in 3NF.
- All determinants (PaymentID) are candidate keys, hence the table is in BCNF.

VI. Review

- All attributes depend on the ReviewID, hence the table is in 2NF.
- All attributes depend directly on ReviewID, hence the table is in 3NF.
- All determinants (ReviewID) are candidate keys, hence the table is in BCNF.

VII. Discount

- All attributes depend on the DiscountID, hence the table is in 2NF.
- All attributes depend directly on DiscountID, hence the table is in 3NF.
- All determinants (DiscountID) are candidate keys, hence the table is in BCNF.

VIII. BookingDiscount

- All attributes depend on the BookingDiscountID, hence the table is in 2NF.
- All attributes depend directly on BookingDiscountID, hence the table is in 3NF.
- All determinants (BookingDiscountID) are candidate keys, hence the table is in BCNF.

IX. MaintenanceRequest

- All attributes depend on the RequestID, hence the table is in 2NF.
- All attributes depend directly on RequestID, hence the table is in 3NF.
- All determinants (RequestID) are candidate keys, hence the table is in BCNF.

X. Billing

- All attributes depend on the BillingID, hence the table is in 2NF.
- All attributes depend directly on BillingID, hence the table is in 3NF.
- All determinants (BillingID) are candidate keys, hence the table is in BCNF.

XI. Feedback

- All attributes depend on the FeedbackID, hence the table is in 2NF.
- All attributes depend directly on FeedbackID, hence the table is in 3NF.
- All determinants (FeedbackID) are candidate keys, hence the table is in BCNF.

SQL CODE

1) CREATING TABLES

```
CREATE TABLE Guest (  
    GuestID INT AUTO_INCREMENT PRIMARY KEY,  
    FirstName VARCHAR(50),  
    LastName VARCHAR(50),  
    Phone VARCHAR(15),  
    Email VARCHAR(100),  
    Address VARCHAR(255)  
);
```

```
CREATE TABLE Room (  
    RoomID INT AUTO_INCREMENT PRIMARY KEY,  
    RoomNumber VARCHAR(10),  
    RoomType VARCHAR(50),  
    PricePerNight DECIMAL(10, 2),  
    RoomStatus VARCHAR(20)  
);
```

```
CREATE TABLE Booking (  
    BookingID INT AUTO_INCREMENT PRIMARY KEY,  
    GuestID INT,  
    RoomID INT,  
    BookingDate DATE,  
    CheckInDate DATE,  
    CheckOutDate DATE,  
    BookingStatus VARCHAR(20),  
    TotalAmount DECIMAL(10, 2),
```

FOREIGN KEY (GuestID) REFERENCES Guest(GuestID),

FOREIGN KEY (RoomID) REFERENCES Room(RoomID)

);

CREATE TABLE PaymentMethod (

PaymentMethodID INT AUTO_INCREMENT PRIMARY KEY,

MethodName VARCHAR(50)

);

CREATE TABLE Payment (

PaymentID INT AUTO_INCREMENT PRIMARY KEY,

BookingID INT,

PaymentDate DATE,

Amount DECIMAL(10, 2),

PaymentMethodID INT,

FOREIGN KEY (BookingID) REFERENCES Booking(BookingID),

FOREIGN KEY (PaymentMethodID) REFERENCES
PaymentMethod(PaymentMethodID)

);

CREATE TABLE Review (

ReviewID INT AUTO_INCREMENT PRIMARY KEY,

BookingID INT,

ReviewText TEXT,

Rating INT,

ReviewDate DATE,

```
FOREIGN KEY (BookingID) REFERENCES Booking(BookingID)
);
```

```
CREATE TABLE Discount (
    DiscountID INT AUTO_INCREMENT PRIMARY KEY,
    DiscountCode VARCHAR(50),
    Description TEXT,
    StartDate DATE,
    EndDate DATE,
    DiscountAmount DECIMAL(10, 2)
);
```

```
CREATE TABLE BookingDiscount (
    BookingDiscountID INT AUTO_INCREMENT PRIMARY KEY,
    BookingID INT,
    DiscountID INT,
    FOREIGN KEY (BookingID) REFERENCES Booking(BookingID),
    FOREIGN KEY (DiscountID) REFERENCES Discount(DiscountID)
);
```

```
CREATE TABLE MaintenanceRequest (
    RequestID INT AUTO_INCREMENT PRIMARY KEY,
    RoomID INT,
    RequestDate DATE,
    Description TEXT,
```

```
Status VARCHAR(20),

FOREIGN KEY (RoomID) REFERENCES Room(RoomID)

);


CREATE TABLE Billing (

    BillingID INT AUTO_INCREMENT PRIMARY KEY,

    BookingID INT,

    TotalAmount DECIMAL(10, 2),

    TaxAmount DECIMAL(10, 2),

    DiscountAmount DECIMAL(10, 2),

    FinalAmount DECIMAL(10, 2),

    FOREIGN KEY (BookingID) REFERENCES Booking(BookingID)

);


CREATE TABLE Feedback (

    FeedbackID INT AUTO_INCREMENT PRIMARY KEY,

    GuestID INT,

    FeedbackDate DATE,

    FeedbackText TEXT,

    Rating INT,

    FOREIGN KEY (GuestID) REFERENCES Guest(GuestID)

);
```

2) **INSERTING TUPLES**

```
INSERT INTO Guest (FirstName, LastName, Phone, Email, Address)
VALUES ('John', 'Doe', '1234567890', 'john.doe@example.com', '123 Main St,
Anytown, USA'),
('Jane', 'Smith', '9876543210', 'jane.smith@example.com', '456 Oak Ave,
Sometown, USA'),
('Michael', 'Johnson', '5551234567', 'michael.johnson@example.com', '789 Pine
Rd, Anycity, USA'),
('Emily', 'Brown', '9998887777', 'emily.brown@example.com', '321 Elm Blvd,
Othertown, USA'),
('David', 'Lee', '3334445555', 'david.lee@example.com', '654 Birch Ln,
Somewhere, USA'),
('Sarah', 'Wilson', '7776665555', 'sarah.wilson@example.com', '876 Cedar St,
Anyplace, USA');
```

```
INSERT INTO Room (RoomNumber, RoomType, PricePerNight, RoomStatus)
VALUES ('101', 'Standard', 100.00, 'Available'),
('102', 'Deluxe', 150.00, 'Available'),
('103', 'Suite', 250.00, 'Occupied'),
('104', 'Standard', 100.00, 'Available'),
('105', 'Standard', 100.00, 'Available'),
('106', 'Deluxe', 150.00, 'Available');
```

```
INSERT INTO Booking (GuestID, RoomID, BookingDate, CheckInDate,
CheckOutDate, BookingStatus, TotalAmount)
VALUES (1, 2, '2024-07-12', '2024-07-15', '2024-07-17', 'Confirmed', 450.00),
(2, 1, '2024-07-14', '2024-07-16', '2024-07-18', 'Confirmed', 300.00),
(3, 3, '2024-07-10', '2024-07-13', '2024-07-16', 'Confirmed', 750.00),
(4, 4, '2024-07-11', '2024-07-14', '2024-07-15', 'Confirmed', 200.00),
(5, 5, '2024-07-09', '2024-07-12', '2024-07-14', 'Confirmed', 200.00),
(6, 6, '2024-07-08', '2024-07-10', '2024-07-12', 'Confirmed', 300.00);
```

```
INSERT INTO PaymentMethod (MethodName)
VALUES ('Credit Card'),
('Debit Card'),
('Cash');
```

```
INSERT INTO Payment (BookingID, PaymentDate, Amount,
PaymentMethodID)
VALUES (1, '2024-07-15', 450.00, 1),
(2, '2024-07-16', 300.00, 2),
(3, '2024-07-13', 750.00, 1),
(4, '2024-07-14', 200.00, 3),
(5, '2024-07-12', 200.00, 1),
(6, '2024-07-10', 300.00, 2);
```

```
INSERT INTO Review (BookingID, ReviewText, Rating, ReviewDate)
VALUES (1, 'Great experience, highly recommended!', 5, '2024-07-18'),
(2, 'Comfortable stay, good service.', 4, '2024-07-19'),
(3, 'Excellent suite, loved the amenities.', 5, '2024-07-17'),
(4, 'Decent stay for the price.', 3, '2024-07-16'),
(5, 'Nice room, friendly staff.', 4, '2024-07-15'),
(6, 'Good location, clean rooms.', 4, '2024-07-14');
```

```
INSERT INTO Discount (DiscountCode, Description, StartDate, EndDate,
DiscountAmount)
VALUES ('SUMMER2024', 'Summer discount offer', '2024-06-01', '2024-08-
31', 20.00),
('WEEKEND15', 'Weekend special discount', '2024-01-01', '2024-12-31',
15.00),
('FIRSTBOOKING', 'First booking discount', '2024-01-01', '2024-12-31',
25.00);
```

```
INSERT INTO BookingDiscount (BookingID, DiscountID)
VALUES (1, 1),
(2, 2),
(3, 3),
(4, 1),
(5, 2),
(6, 3);
```

```
INSERT INTO MaintenanceRequest (RoomID, RequestDate, Description,
Status)
VALUES (1, '2024-07-05', 'Replace broken lamp in room.', 'Pending'),
(2, '2024-07-06', 'Fix leaking faucet in bathroom.', 'In Progress'),
(3, '2024-07-07', 'Paint walls in suite.', 'Completed');
```

```
INSERT INTO Billing (BookingID, TotalAmount, TaxAmount,
DiscountAmount, FinalAmount)
VALUES (1, 450.00, 45.00, 20.00, 475.00),
(2, 300.00, 30.00, 15.00, 315.00),
(3, 750.00, 75.00, 25.00, 800.00),
(4, 200.00, 20.00, 20.00, 200.00),
(5, 200.00, 20.00, 15.00, 205.00),
(6, 300.00, 30.00, 25.00, 305.00);
```

```
INSERT INTO Feedback (GuestID, FeedbackDate, FeedbackText, Rating)
VALUES (1, '2024-07-18', 'Great experience, loved the room!', 5),
(2, '2024-07-19', 'Friendly staff, good amenities.', 4),
(3, '2024-07-17', 'Beautiful suite, excellent service.', 5),
(4, '2024-07-16', 'Average stay, could be improved.', 3),
(5, '2024-07-15', 'Nice hotel, comfortable stay.', 4),
(6, '2024-07-14', 'Good location, clean rooms.', 4);
```

TABLES AFTER INSERTION

1) Guest:

GuestID	FirstName	LastName	Phone	Email	Address
1	John	Doe	1234567890	john.doe@example.com	123 Main St, Anytown, USA
2	Jane	Smith	9876543210	jane.smith@example.com	456 Oak Ave, Sometown, USA
3	Michael	Johnson	5551234567	michael.johnson@example.com	789 Pine Rd, Anycity, USA
4	Emily	Brown	9998887777	emily.brown@example.com	321 Elm Blvd, Othertown, USA
5	David	Lee	3334445555	david.lee@example.com	654 Birch Ln, Somewhere, USA
6	Sarah	Wilson	7776665555	sarah.wilson@example.com	876 Cedar St, Anyplace, USA

2)Room:

RoomID	RoomNumber	RoomType	PricePerNight	RoomStatus
1	101	Standard	100.00	Available
2	102	Deluxe	150.00	Available
3	103	Suite	250.00	Occupied
4	104	Standard	100.00	Available
5	105	Standard	100.00	Available
6	106	Deluxe	150.00	Available

3)Booking:

BookingID	GuestID	RoomID	BookingDate	CheckInDate	CheckOutDate	BookingStatus	TotalAmount
1	1	2	2024-07-12	2024-07-15	2024-07-17	Confirmed	450.00
2	2	1	2024-07-14	2024-07-16	2024-07-18	Confirmed	300.00
3	3	3	2024-07-10	2024-07-13	2024-07-16	Confirmed	750.00
4	4	4	2024-07-11	2024-07-14	2024-07-15	Confirmed	200.00
5	5	5	2024-07-09	2024-07-12	2024-07-14	Confirmed	200.00
6	6	6	2024-07-08	2024-07-10	2024-07-12	Confirmed	300.00

4)PaymentMethod:

PaymentMethodID	MethodName
1	Credit Card
2	Debit Card
3	Cash

5) Payment:

PaymentID	BookingID	PaymentDate	Amount	PaymentMethodID
1	1	2024-07-15	450.00	1
2	2	2024-07-16	300.00	2
3	3	2024-07-13	750.00	1
4	4	2024-07-14	200.00	3
5	5	2024-07-12	200.00	1
6	6	2024-07-10	300.00	2

6) Review:

ReviewID	BookingID	ReviewText	Rating	ReviewDate
1	1	Great experience, highly recommended!	5	2024-07-18
2	2	Comfortable stay, good service.	4	2024-07-19
3	3	Excellent suite, loved the amenities.	5	2024-07-17
4	4	Decent stay for the price.	3	2024-07-16
5	5	Nice room, friendly staff.	4	2024-07-15
6	6	Good location, clean rooms.	4	2024-07-14

7) Discount

DiscountID	DiscountCode	Description	StartDate	EndDate	DiscountAmount
1	SUMMER2024	Summer discount offer	2024-06-01	2024-08-31	20.00
2	WEEKEND15	Weekend special discount	2024-01-01	2024-12-31	15.00
3	FIRSTBOOKING	First booking discount	2024-01-01	2024-12-31	25.00

8) BookingDiscount

BookingDiscountID	BookingID	DiscountID
1	1	1
2	2	2
3	3	3
4	4	1
5	5	2
6	6	3

9) MaintenanceRequest

RequestID	RoomID	RequestDate	Description	Status
1	1	2024-07-05	Replace broken lamp in room.	Pending
2	2	2024-07-06	Fix leaking faucet in bathroom.	In Progress
3	3	2024-07-07	Paint walls in suite.	Completed

10) Billing

BillingID	BookingID	TotalAmount	TaxAmount	DiscountAmount	FinalAmount
1	1	450.00	45.00	20.00	475.00
2	2	300.00	30.00	15.00	315.00
3	3	750.00	75.00	25.00	800.00
4	4	200.00	20.00	20.00	200.00
5	5	200.00	20.00	15.00	205.00
6	6	300.00	30.00	25.00	305.00

11)Feedback

FeedbackID	GuestID	FeedbackDate	FeedbackText	Rating
1	1	2024-07-18	Great experience, loved the room!	5
2	2	2024-07-19	Friendly staff, good amenities.	4
3	3	2024-07-17	Beautiful suite, excellent service.	5
4	4	2024-07-16	Average stay, could be improved.	3
5	5	2024-07-15	Nice hotel, comfortable stay.	4
6	6	2024-07-14	Good location, clean rooms.	4