create database hotel\_reservation\_system;

use hotel\_reservation\_system;

Here are three tables you might consider creating for a Hotel Reservation System, each with various date and datetime columns:

1. **Table: Guests**

This table will store information about the guests who are making reservations.

**CREATE TABLE Guests (**

**guest\_id INT PRIMARY KEY,**

**first\_name VARCHAR(50),**

**last\_name VARCHAR(50),**

**email VARCHAR(100),**

**phone\_number VARCHAR(15),**

**registration\_date DATETIME,**

**date\_of\_birth DATE**

**);**

-- Inserting data into the Guests table

INSERT INTO Guests (guest\_id, first\_name, last\_name, email, phone\_number, registration\_date, date\_of\_birth)

VALUES

(1, 'John', 'Doe', 'john.doe@example.com', '555-123-4567', '2023-09-01 08:00:00', '1990-05-15'),

(2, 'Jane', 'Smith', 'jane.smith@example.com', '555-987-6543', '2023-09-01 09:15:00', '1985-12-10'),

(3, 'Michael', 'Johnson', 'michael.j@example.com', '555-567-8901', '2023-09-01 10:30:00', '1995-03-22'),

(4, 'Emily', 'Brown', 'emily.b@example.com', '555-234-5678', '2023-09-01 11:45:00', '1982-07-04'),

(5, 'William', 'Anderson', 'william.a@example.com', '555-789-1234', '2023-09-01 13:00:00', '1998-09-18'),

(6, 'Olivia', 'Davis', 'olivia.d@example.com', '555-345-6789', '2023-09-01 14:15:00', '1993-11-30'),

(7, 'James', 'Wilson', 'james.w@example.com', '555-876-5432', '2023-09-01 15:30:00', '1989-04-12'),

(8, 'Sophia', 'Lee', 'sophia.l@example.com', '555-432-1098', '2023-09-01 16:45:00', '1997-01-25'),

(9, 'Benjamin', 'Martinez', 'benjamin.m@example.com', '555-210-9876', '2023-09-01 18:00:00', '1991-08-08'),

(10, 'Ava', 'Harris', 'ava.h@example.com', '555-987-6543', '2023-09-01 19:15:00', '1994-06-28');

-- Inserting 10 more rows of data into the Guests table

INSERT INTO Guests (guest\_id, first\_name, last\_name, email, phone\_number, registration\_date, date\_of\_birth)

VALUES

(11, 'Liam', 'Garcia', 'liam.g@example.com', '555-123-7890', '2023-09-02 08:00:00', '1996-10-17'),

(12, 'Charlotte', 'Smith', 'charlotte.s@example.com', '555-555-5555', '2023-09-02 09:15:00', '1987-09-02'),

(13, 'Mason', 'Wang', 'mason.w@example.com', '555-111-2222', '2023-09-02 10:30:00', '1992-02-25'),

(14, 'Emma', 'Brown', 'emma.b@example.com', '555-999-8888', '2023-09-02 11:45:00', '1999-03-12'),

(15, 'Noah', 'Jones', 'noah.j@example.com', '555-777-6666', '2023-09-02 13:00:00', '1994-07-29'),

(16, 'Olivia', 'Martinez', 'olivia.m@example.com', '555-333-4444', '2023-09-02 14:15:00', '1988-12-05'),

(17, 'Ethan', 'Miller', 'ethan.m@example.com', '555-222-3333', '2023-09-02 15:30:00', '1993-04-20'),

(18, 'Ava', 'Johnson', 'ava.j@example.com', '555-888-9999', '2023-09-02 16:45:00', '1990-06-14'),

(19, 'Liam', 'Davis', 'liam.d@example.com', '555-444-5555', '2023-09-02 18:00:00', '1986-08-31'),

(20, 'Sophia', 'Smith', 'sophia.s@example.com', '555-666-7777', '2023-09-02 19:15:00', '1995-01-10');

-- Inserting 10 more rows of data into the Guests table

INSERT INTO Guests (guest\_id, first\_name, last\_name, email, phone\_number, registration\_date, date\_of\_birth)

VALUES

(21, 'William', 'Johnson', 'william.j@example.com', '555-123-4567', '2023-09-03 08:00:00', '1998-09-15'),

(22, 'Olivia', 'Garcia', 'olivia.g@example.com', '555-987-6543', '2023-09-03 09:15:00', '1993-11-20'),

(23, 'James', 'Lee', 'james.l@example.com', '555-567-8901', '2023-09-03 10:30:00', '1989-04-02'),

(24, 'Emma', 'Anderson', 'emma.a@example.com', '555-234-5678', '2023-09-03 11:45:00', '1982-07-15'),

(25, 'Liam', 'Harris', 'liam.h@example.com', '555-789-1234', '2023-09-03 13:00:00', '1997-09-18'),

(26, 'Ava', 'Brown', 'ava.b@example.com', '555-345-6789', '2023-09-03 14:15:00', '1994-11-30'),

(27, 'Noah', 'Wilson', 'noah.w@example.com', '555-876-5432', '2023-09-03 15:30:00', '1986-04-12'),

(28, 'Sophia', 'Davis', 'sophia.d@example.com', '555-432-1098', '2023-09-03 16:45:00', '1990-01-25'),

(29, 'Benjamin', 'Smith', 'benjamin.s@example.com', '555-210-9876', '2023-09-03 18:00:00', '1985-08-08'),

(30, 'Charlotte', 'Martinez', 'charlotte.m@example.com', '555-777-8888', '2023-09-03 19:15:00', '1991-06-28');

-- Inserting 10 more rows of data into the Guests table

INSERT INTO Guests (guest\_id, first\_name, last\_name, email, phone\_number, registration\_date, date\_of\_birth)

VALUES

(31, 'Ethan', 'Thompson', 'ethan.t@example.com', '555-123-4567', '2023-09-04 08:00:00', '1999-10-15'),

(32, 'Mia', 'Jackson', 'mia.j@example.com', '555-987-6543', '2023-09-04 09:15:00', '1992-11-20'),

(33, 'Liam', 'Taylor', 'liam.t@example.com', '555-567-8901', '2023-09-04 10:30:00', '1987-04-02'),

(34, 'Olivia', 'Hernandez', 'olivia.h@example.com', '555-234-5678', '2023-09-04 11:45:00', '1983-07-15'),

(35, 'Noah', 'Gonzalez', 'noah.g@example.com', '555-789-1234', '2023-09-04 13:00:00', '1995-09-18'),

(36, 'Emma', 'Lopez', 'emma.l@example.com', '555-345-6789', '2023-09-04 14:15:00', '1990-11-30'),

(37, 'Liam', 'Wright', 'liam.w@example.com', '555-876-5432', '2023-09-04 15:30:00', '1988-04-12'),

(38, 'Ava', 'Perez', 'ava.p@example.com', '555-432-1098', '2023-09-04 16:45:00', '1993-01-25'),

(39, 'James', 'Rodriguez', 'james.r@example.com', '555-210-9876', '2023-09-04 18:00:00', '1996-08-08'),

(40, 'Sophia', 'Gomez', 'sophia.g@example.com', '555-777-8888', '2023-09-04 19:15:00', '1998-06-28');

-- Inserting 10 more rows of data into the Guests table

INSERT INTO Guests (guest\_id, first\_name, last\_name, email, phone\_number, registration\_date, date\_of\_birth)

VALUES

(41, 'Oliver', 'Harrison', 'oliver.h@example.com', '555-123-4567', '2023-09-05 08:00:00', '1997-03-10'),

(42, 'Mia', 'Morales', 'mia.m@example.com', '555-987-6543', '2023-09-05 09:15:00', '1990-08-22'),

(43, 'Elijah', 'Kim', 'elijah.k@example.com', '555-567-8901', '2023-09-05 10:30:00', '1995-05-18'),

(44, 'Sophia', 'Nguyen', 'sophia.n@example.com', '555-234-5678', '2023-09-05 11:45:00', '1984-12-03'),

(45, 'Noah', 'Patel', 'noah.p@example.com', '555-789-1234', '2023-09-05 13:00:00', '1992-02-25'),

(46, 'Ava', 'Reyes', 'ava.r@example.com', '555-345-6789', '2023-09-05 14:15:00', '1999-07-12'),

(47, 'Liam', 'Taylor', 'liam.t@example.com', '555-876-5432', '2023-09-05 15:30:00', '1991-11-30'),

(48, 'Olivia', 'Lopez', 'olivia.l@example.com', '555-432-1098', '2023-09-05 16:45:00', '1998-06-14'),

(49, 'Jackson', 'Hernandez', 'jackson.h@example.com', '555-210-9876', '2023-09-05 18:00:00', '1993-05-28'),

(50, 'Emma', 'Wright', 'emma.w@example.com', '555-777-8888', '2023-09-05 19:15:00', '1986-09-15');

**Table: Rooms**

This table will hold information about the different rooms available in the hotel.

**CREATE TABLE Rooms (**

**room\_id INT PRIMARY KEY,**

**room\_number VARCHAR(10),**

**room\_type VARCHAR(50),**

**max\_occupancy INT,**

**price\_per\_night DECIMAL(10, 2),**

**last\_cleaned\_date DATE,**

**maintenance\_due\_date DATE**

**);**

-- Inserting data into the Rooms table

INSERT INTO Rooms (room\_id, room\_number, room\_type, max\_occupancy, price\_per\_night, last\_cleaned\_date, maintenance\_due\_date)

VALUES

(1, '101', 'Standard', 2, 100.00, '2023-09-01', '2023-10-01'),

(2, '102', 'Standard', 2, 100.00, '2023-09-02', '2023-10-02'),

(3, '201', 'Deluxe', 3, 150.00, '2023-09-03', '2023-10-03'),

(4, '202', 'Deluxe', 3, 150.00, '2023-09-04', '2023-10-04'),

(5, '301', 'Suite', 4, 200.00, '2023-09-05', '2023-10-05'),

(6, '302', 'Suite', 4, 200.00, '2023-09-06', '2023-10-06'),

(7, '401', 'Standard', 2, 100.00, '2023-09-07', '2023-10-07'),

(8, '402', 'Standard', 2, 100.00, '2023-09-08', '2023-10-08'),

(9, '501', 'Deluxe', 3, 150.00, '2023-09-09', '2023-10-09'),

(10, '502', 'Deluxe', 3, 150.00, '2023-09-10', '2023-10-10');

-- Inserting 30 more rows of data into the Rooms table

INSERT INTO Rooms (room\_id, room\_number, room\_type, max\_occupancy, price\_per\_night, last\_cleaned\_date, maintenance\_due\_date)

VALUES

(11, '601', 'Suite', 4, 200.00, '2023-09-11', '2023-10-11'),

(12, '602', 'Suite', 4, 200.00, '2023-09-12', '2023-10-12'),

(13, '701', 'Standard', 2, 100.00, '2023-09-13', '2023-10-13'),

(14, '702', 'Standard', 2, 100.00, '2023-09-14', '2023-10-14'),

(15, '801', 'Deluxe', 3, 150.00, '2023-09-15', '2023-10-15'),

(16, '802', 'Deluxe', 3, 150.00, '2023-09-16', '2023-10-16'),

(17, '901', 'Suite', 4, 200.00, '2023-09-17', '2023-10-17'),

(18, '902', 'Suite', 4, 200.00, '2023-09-18', '2023-10-18'),

(19, '1001', 'Standard', 2, 100.00, '2023-09-19', '2023-10-19'),

(20, '1002', 'Standard', 2, 100.00, '2023-09-20', '2023-10-20'),

(21, '1101', 'Deluxe', 3, 150.00, '2023-09-21', '2023-10-21'),

(22, '1102', 'Deluxe', 3, 150.00, '2023-09-22', '2023-10-22'),

(23, '1201', 'Suite', 4, 200.00, '2023-09-23', '2023-10-23'),

(24, '1202', 'Suite', 4, 200.00, '2023-09-24', '2023-10-24'),

(25, '1301', 'Standard', 2, 100.00, '2023-09-25', '2023-10-25'),

(26, '1302', 'Standard', 2, 100.00, '2023-09-26', '2023-10-26'),

(27, '1401', 'Deluxe', 3, 150.00, '2023-09-27', '2023-10-27'),

(28, '1402', 'Deluxe', 3, 150.00, '2023-09-28', '2023-10-28'),

(29, '1501', 'Suite', 4, 200.00, '2023-09-29', '2023-10-29'),

(30, '1502', 'Suite', 4, 200.00, '2023-09-30', '2023-10-30');

**Table: Reservations**

This table will store the reservations made by guests.

**CREATE TABLE Reservations (**

**reservation\_id INT PRIMARY KEY,**

**guest\_id INT,**

**room\_id INT,**

**check\_in\_date DATETIME,**

**check\_out\_date DATETIME,**

**reservation\_date DATETIME,**

**num\_guests int,**

**total\_amount DECIMAL(10, 2),**

**FOREIGN KEY (guest\_id) REFERENCES Guests(guest\_id),**

**FOREIGN KEY (room\_id) REFERENCES Rooms(room\_id)**

**);**

-- Inserting data into the Reservations table

INSERT INTO Reservations (reservation\_id, guest\_id, room\_id, check\_in\_date, check\_out\_date, reservation\_date, num\_guests, total\_amount)

VALUES

(1, 1, 5, '2023-09-01 14:00:00', '2023-09-03 12:00:00', '2023-08-15 10:00:00', 2, 250.00),

(2, 2, 7, '2023-09-02 15:00:00', '2023-09-05 11:00:00', '2023-08-16 11:30:00', 3, 375.00),

(3, 3, 10, '2023-09-03 12:00:00', '2023-09-06 10:00:00', '2023-08-17 09:45:00', 2, 300.00),

(4, 4, 15, '2023-09-04 14:00:00', '2023-09-07 12:00:00', '2023-08-18 13:15:00', 4, 600.00),

(5, 5, 21, '2023-09-05 16:00:00', '2023-09-08 14:00:00', '2023-08-19 14:30:00', 2, 400.00),

(6, 6, 28, '2023-09-06 10:00:00', '2023-09-09 08:00:00', '2023-08-20 15:45:00', 3, 450.00),

(7, 7, 22, '2023-09-07 14:00:00', '2023-09-10 12:00:00', '2023-08-21 08:30:00', 2, 350.00),

(8, 8, 28, '2023-09-08 11:00:00', '2023-09-11 09:00:00', '2023-08-22 12:00:00', 4, 500.00),

(9, 9, 22, '2023-09-09 13:00:00', '2023-09-12 11:00:00', '2023-08-23 14:45:00', 2, 275.00),

(10, 10, 25, '2023-09-10 15:00:00', '2023-09-13 13:00:00', '2023-08-24 16:30:00', 3, 425.00);

-- Inserting 20 more rows of data into the Reservations table

INSERT INTO Reservations (reservation\_id, guest\_id, room\_id, check\_in\_date, check\_out\_date, reservation\_date, num\_guests, total\_amount)

VALUES

(11, 11, 12, '2023-09-11 14:00:00', '2023-09-13 12:00:00', '2023-09-01 10:00:00', 2, 220.00),

(12, 12, 14, '2023-09-12 15:00:00', '2023-09-15 11:00:00', '2023-09-02 11:30:00', 3, 345.00),

(13, 13, 17, '2023-09-13 12:00:00', '2023-09-16 10:00:00', '2023-09-03 09:45:00', 2, 280.00),

(14, 14, 19, '2023-09-14 14:00:00', '2023-09-17 12:00:00', '2023-09-04 13:15:00', 4, 520.00),

(15, 15, 22, '2023-09-15 16:00:00', '2023-09-18 14:00:00', '2023-09-05 14:30:00', 2, 380.00),

(16, 16, 25, '2023-09-16 10:00:00', '2023-09-19 08:00:00', '2023-09-06 15:45:00', 3, 435.00),

(17, 17, 29, '2023-09-17 14:00:00', '2023-09-20 12:00:00', '2023-09-07 08:30:00', 2, 360.00),

(18, 18, 30, '2023-09-18 11:00:00', '2023-09-21 09:00:00', '2023-09-08 12:00:00', 4, 520.00),

(19, 19, 30, '2023-09-19 13:00:00', '2023-09-22 11:00:00', '2023-09-09 14:45:00', 2, 275.00),

(20, 20, 22, '2023-09-20 15:00:00', '2023-09-23 13:00:00', '2023-09-10 16:30:00', 3, 425.00),

(21, 21, 26, '2023-09-21 14:00:00', '2023-09-24 12:00:00', '2023-09-11 10:00:00', 2, 230.00),

(22, 22, 30, '2023-09-22 15:00:00', '2023-09-25 11:00:00', '2023-09-12 11:30:00', 3, 350.00),

(23, 23, 3, '2023-09-23 12:00:00', '2023-09-26 10:00:00', '2023-09-13 09:45:00', 2, 210.00),

(24, 24, 6, '2023-09-24 14:00:00', '2023-09-27 12:00:00', '2023-09-14 13:15:00', 4, 590.00),

(25, 25, 9, '2023-09-25 16:00:00', '2023-09-28 14:00:00', '2023-09-15 14:30:00', 2, 370.00),

(26, 26, 12, '2023-09-26 10:00:00', '2023-09-29 08:00:00', '2023-09-16 15:45:00', 3, 425.00),

(27, 27, 15, '2023-09-27 14:00:00', '2023-09-30 12:00:00', '2023-09-17 08:30:00', 2, 340.00),

(28, 28, 18, '2023-09-28 11:00:00', '2023-10-01 09:00:00', '2023-09-18 12:00:00', 4, 510.00),

(29, 29, 21, '2023-09-29 13:00:00', '2023-10-02 11:00:00', '2023-09-19 14:45:00', 2, 290.00),

(30, 30, 24, '2023-09-30 15:00:00', '2023-10-03 13:00:00', '2023-09-20 16:30:00', 3, 440.00);

-- Inserting 20 more rows of data into the Reservations table

INSERT INTO Reservations (reservation\_id, guest\_id, room\_id, check\_in\_date, check\_out\_date, reservation\_date, num\_guests, total\_amount)

VALUES

(31, 31, 27, '2023-10-01 14:00:00', '2023-10-04 12:00:00', '2023-09-21 10:00:00', 2, 260.00),

(32, 32, 30, '2023-10-02 15:00:00', '2023-10-05 11:00:00', '2023-09-22 11:30:00', 3, 375.00),

(33, 33, 24, '2023-10-03 12:00:00', '2023-10-06 10:00:00', '2023-09-23 09:45:00', 2, 290.00),

(34, 34, 17, '2023-10-04 14:00:00', '2023-10-07 12:00:00', '2023-09-24 13:15:00', 4, 540.00),

(35, 35, 10, '2023-10-05 16:00:00', '2023-10-08 14:00:00', '2023-09-25 14:30:00', 2, 390.00),

(36, 36, 13, '2023-10-06 10:00:00', '2023-10-09 08:00:00', '2023-09-26 15:45:00', 3, 455.00),

(37, 37, 16, '2023-10-07 14:00:00', '2023-10-10 12:00:00', '2023-09-27 08:30:00', 2, 370.00),

(38, 38, 19, '2023-10-08 11:00:00', '2023-10-11 09:00:00', '2023-09-28 12:00:00', 4, 520.00),

(39, 39, 9, '2023-10-09 13:00:00', '2023-10-12 11:00:00', '2023-09-29 14:45:00', 2, 285.00),

(40, 40, 14, '2023-10-10 15:00:00', '2023-10-13 13:00:00', '2023-09-30 16:30:00', 3, 435.00),

(41, 41, 19, '2023-10-11 14:00:00', '2023-10-14 12:00:00', '2023-10-01 10:00:00', 2, 240.00),

(42, 42, 24, '2023-10-12 15:00:00', '2023-10-15 11:00:00', '2023-10-02 11:30:00', 3, 360.00),

(43, 43, 29, '2023-10-13 12:00:00', '2023-10-16 10:00:00', '2023-10-03 09:45:00', 2, 270.00),

(44, 44, 24, '2023-10-14 14:00:00', '2023-10-17 12:00:00', '2023-10-04 13:15:00', 4, 520.00),

(45, 45, 29, '2023-10-15 16:00:00', '2023-10-18 14:00:00', '2023-10-05 14:30:00', 2, 385.00),

(46, 46, 24, '2023-10-16 10:00:00', '2023-10-19 08:00:00', '2023-10-06 15:45:00', 3, 440.00),

(47, 47, 29, '2023-10-17 14:00:00', '2023-10-20 12:00:00', '2023-10-07 08:30:00', 2, 365.00),

(48, 48, 7, '2023-10-18 11:00:00', '2023-10-21 09:00:00', '2023-10-08 12:00:00', 4, 510.00),

(49, 49, 12, '2023-10-19 13:00:00', '2023-10-22 11:00:00', '2023-10-09 14:45:00', 2, 280.00),

(50, 50, 17, '2023-10-20 15:00:00', '2023-10-23 13:00:00', '2023-10-10 16:30:00', 3, 430.00);

**/\*update reservations**

**set reservation\_date = date\_sub(check\_in\_date, interval 10 day);**

\*/

**Query 1: Count the number of reservations made on or after September 1, 2023.**

**Query 2: Calculate the average length of stay for all reservations.**

**Query 3: Find the total revenue earned in the month of October 2023.**

**Query 4: Calculate the average number of guests per reservation.**

**Query 5: Find the number of rooms that were cleaned more than 10 days ago.**

**Query 6: Calculate the average price per night for each room type.**

**Query 7: Calculate the difference in days between the first and last reservation made.**

**Query 8: Find the number of reservations that were checked out on a Friday.**

**Query 9: Calculate the average number of guests per reservation for each room type**

**Query 10: Find the room with the highest total revenue earned from reservations.**

**Query 11: Find the guest who has the highest total amount spent on reservations in the last 6 months.**

**Query 12: Find the rooms that haven't been cleaned in the last 7 days and are due for maintenance within the next 5 days.**

**Query 13: Calculate the total revenue earned on weekends (Saturday and Sunday).**

**Query 14: Calculate the average length of stay for reservations made by guests who have booked a Penthouse room in the past year.**

**Query 15: Calculate the total revenue earned in each month of the current year.**

**Query 16: Calculate the average stay duration for guests of each age group (in years).**

**Query 17: Calculate the total revenue earned from reservations made on weekdays (Monday to Friday).**

**Query 18: Count the number of reservations that were made by guests who have a registration date before their date of birth.**

**Query 19: Find the room number and room type of the room that has the highest total revenue generated from reservations in the past year.**

**Query 20: Calculate the percentage of reservations that were made by guests who registered in the current year.**

**Query 21: Calculate the total revenue earned in the current month.**

**Query 22: Calculate the average stay duration for all reservations made in the last year.**

**Query 23: Calculate the number of reservations made on weekends (Saturday and Sunday) in the past 6 months.**

**Query 24: Calculate the average lead time for all reservations made in the last 3 months.**

**Query 25: Calculate the total number of guests who stayed during weekdays (Monday to Friday) in the past year.**

**Query 26: Find the total number of reservations made by each guest in the last 12 months.**

**Query 27: Calculate the average number of guests per reservation for the current year.**

**Query 28: Find the rooms that have been occupied continuously for at least 5 days.**

**Query 29: Calculate the average stay duration for each room type in the past year.**

**Query 30: Calculate the number of reservations made by guests aged between 25 and 40 in the last 6 months.**

**Query 31: Calculate the average total amount spent by guests for reservations made on weekends (Saturday or Sunday).**

**Query 32: Find the room with the highest average length of stay for reservations made in the current year.**

**Query 33: Calculate the total revenue earned from reservations made by guests from a specific city in the past year.**

**Query 34: Find the room with the highest total revenue earned in the current year.**

**Query 35: Calculate the average number of days guests book in advance before making a reservation.**

**Query 36: Calculate the total revenue earned from reservations for each room type in the current year, sorted by room type.**

**Query 37: Find the room with the lowest total revenue earned in the past year.**

**Query 38: Calculate the average number of guests per reservation for each room type in the past year, sorted by room type.**

**Query 39: Calculate the total revenue earned from reservations made by guests who have stayed more than once in the past year.**

**Query 40: Calculate the total revenue earned from reservations for each room type in the past year, sorted by total revenue in descending order.**