# Airline Reservation and Management System (Version - 3)

**SRN- 517_523_824_825**

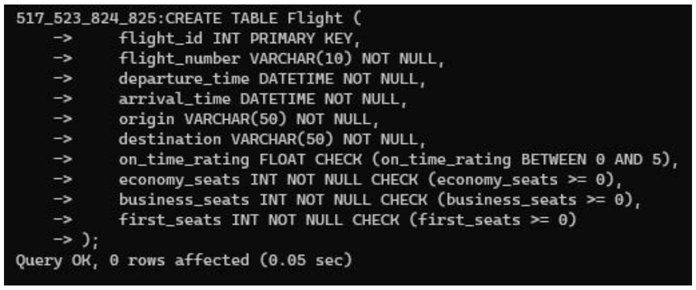
**DESCRIPTION**

SkyHigh Airlines is set to develop an advanced Airline Reservation and Management System to support its growing operations and enhance customer satisfaction. The system will efficiently manage flight details, passenger information, seat allocations, and a loyalty rewards program for frequent travelers. It will include features for tracking critical flight data such as flight numbers, departure and arrival times, destinations, on-time performance ratings, and seat availability across different classes, including Economy, Business, and First. The reservation system will ensure each booking is uniquely identified and linked to specific passengers, flights, and seat assignments, while dynamically updating seat availability in real time to reflect bookings and cancellations accurately.

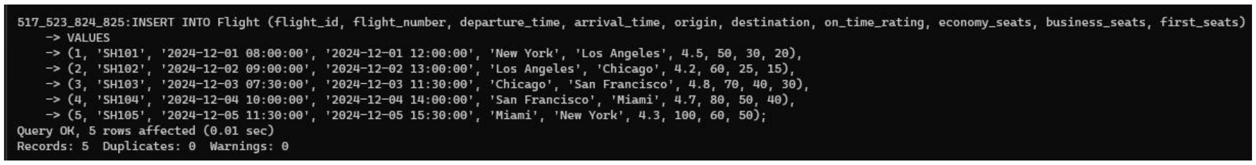
Passenger profiles will store personal information, seat preferences (e.g., window or aisle, preferred class), and booking history, enabling a personalized and seamless experience. To foster customer loyalty, the system will feature a rewards program that tracks miles and points, allowing frequent travelers to redeem benefits like discounts, seat upgrades, or exclusive perks. This loyalty program will operate independently of the core passenger database for efficient reward management. Additionally, the system will monitor and analyze the on-time performance of flights, providing insights into operational efficiency and helping identify areas for improvement.

## QUESTION 3

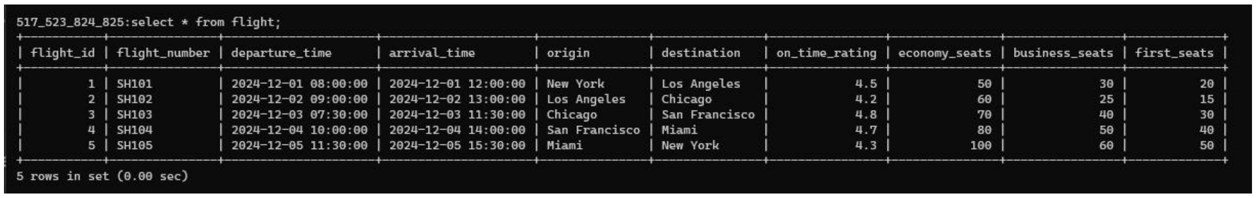
### FLIGHT



```
517_523_824_825:CREATE TABLE Flight (
    ->     flight_id INT PRIMARY KEY,
    ->     flight_number VARCHAR(10) NOT NULL,
    ->     departure_time DATETIME NOT NULL,
    ->     arrival_time DATETIME NOT NULL,
    ->     origin VARCHAR(50) NOT NULL,
    ->     destination VARCHAR(50) NOT NULL,
    ->     on_time_rating FLOAT CHECK (on_time_rating BETWEEN 0 AND 5),
    ->     economy_seats INT NOT NULL CHECK (economy_seats >= 0),
    ->     business_seats INT NOT NULL CHECK (business_seats >= 0),
    ->     first_seats INT NOT NULL CHECK (first_seats >= 0)
    -> );
Query OK, 0 rows affected (0.05 sec)
```

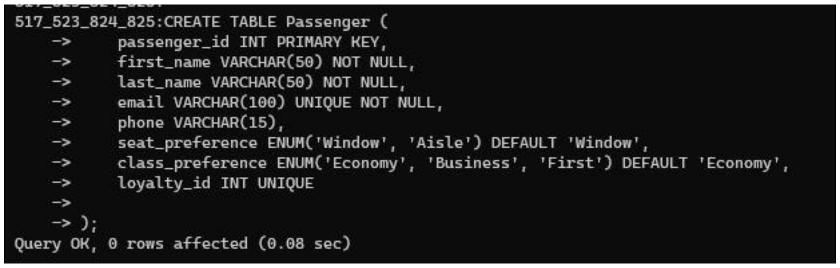


```
517_523_824_825:INSERT INTO Flight (flight_id, flight_number, departure_time, arrival_time, origin, destination, on_time_rating, economy_seats, business_seats, first_seats)
    -> VALUES
    -> (1, 'SH101', '2024-12-01 08:00:00', '2024-12-01 12:00:00', 'New York', 'Los Angeles', 4.5, 50, 30, 20),
    -> (2, 'SH102', '2024-12-02 09:00:00', '2024-12-02 13:00:00', 'Los Angeles', 'Chicago', 4.2, 60, 25, 15),
    -> (3, 'SH103', '2024-12-03 07:30:00', '2024-12-03 11:30:00', 'Chicago', 'San Francisco', 4.8, 70, 40, 30),
    -> (4, 'SH104', '2024-12-04 10:00:00', '2024-12-04 14:00:00', 'San Francisco', 'Miami', 4.7, 80, 50, 40),
    -> (5, 'SH105', '2024-12-05 11:30:00', '2024-12-05 15:30:00', 'Miami', 'New York', 4.3, 100, 60, 50);
Query OK, 5 rows affected (0.01 sec)
Records: 5  Duplicates: 0  Warnings: 0
```

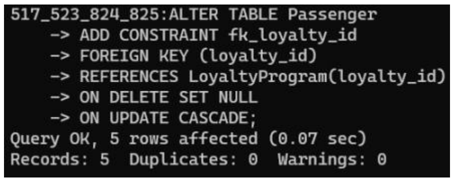


```
517_523_824_825:select * from flight;
+-----------+---------------+---------------------+---------------------+---------------+---------------+----------------+---------------+----------------+-------------+
| flight_id | flight_number | departure_time      | arrival_time        | origin        | destination   | on_time_rating | economy_seats | business_seats | first_seats |
+-----------+---------------+---------------------+---------------------+---------------+---------------+----------------+---------------+----------------+-------------+
|         1 | SH101         | 2024-12-01 08:00:00 | 2024-12-01 12:00:00 | New York      | Los Angeles   |            4.5 |            50 |             30 |          20 |
|         2 | SH102         | 2024-12-02 09:00:00 | 2024-12-02 13:00:00 | Los Angeles   | Chicago       |            4.2 |            60 |             25 |          15 |
|         3 | SH103         | 2024-12-03 07:30:00 | 2024-12-03 11:30:00 | Chicago       | San Francisco |            4.8 |            70 |             40 |          30 |
|         4 | SH104         | 2024-12-04 10:00:00 | 2024-12-04 14:00:00 | San Francisco | Miami         |            4.7 |            80 |             50 |          40 |
|         5 | SH105         | 2024-12-05 11:30:00 | 2024-12-05 15:30:00 | Miami         | New York      |            4.3 |           100 |             60 |          50 |
+-----------+---------------+---------------------+---------------------+---------------+---------------+----------------+---------------+----------------+-------------+
5 rows in set (0.00 sec)
```

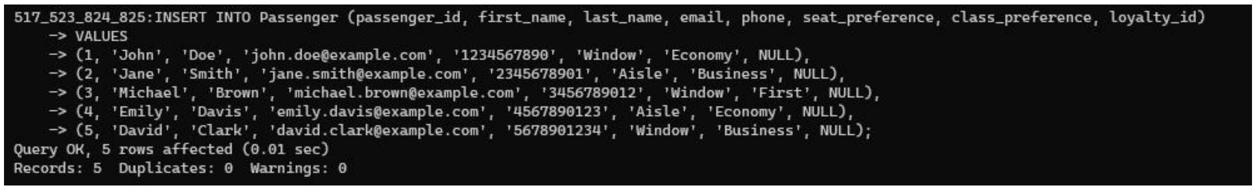
### PASSENGER



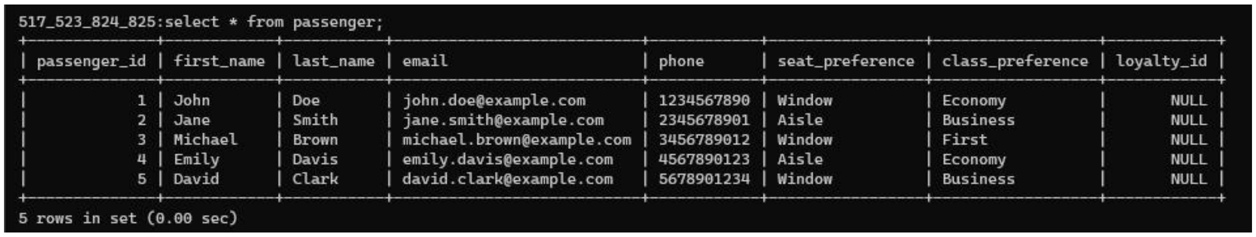
```
517_523_824_825:CREATE TABLE Passenger (
    ->     passenger_id INT PRIMARY KEY,
    ->     first_name VARCHAR(50) NOT NULL,
    ->     last_name VARCHAR(50) NOT NULL,
    ->     email VARCHAR(100) UNIQUE NOT NULL,
    ->     phone VARCHAR(15),
    ->     seat_preference ENUM('Window', 'Aisle') DEFAULT 'Window',
    ->     class_preference ENUM('Economy', 'Business', 'First') DEFAULT 'Economy',
    ->     loyalty_id INT UNIQUE
    ->
    -> );
Query OK, 0 rows affected (0.08 sec)
```



```
517_523_824_825:ALTER TABLE Passenger
    -> ADD CONSTRAINT fk_loyalty_id
    -> FOREIGN KEY (loyalty_id)
    -> REFERENCES LoyaltyProgram(loyalty_id)
    -> ON DELETE SET NULL
    -> ON UPDATE CASCADE;
Query OK, 5 rows affected (0.07 sec)
Records: 5  Duplicates: 0  Warnings: 0
```

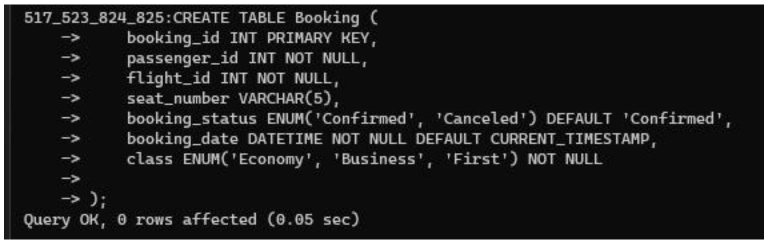


```
517_523_824_825:INSERT INTO Passenger (passenger_id, first_name, last_name, email, phone, seat_preference, class_preference, loyalty_id)
    -> VALUES
    -> (1, 'John', 'Doe', 'john.doe@example.com', '1234567890', 'Window', 'Economy', NULL),
    -> (2, 'Jane', 'Smith', 'jane.smith@example.com', '2345678901', 'Aisle', 'Business', NULL),
    -> (3, 'Michael', 'Brown', 'michael.brown@example.com', '3456789012', 'Window', 'First', NULL),
    -> (4, 'Emily', 'Davis', 'emily.davis@example.com', '4567890123', 'Aisle', 'Economy', NULL),
    -> (5, 'David', 'Clark', 'david.clark@example.com', '5678901234', 'Window', 'Business', NULL);
Query OK, 5 rows affected (0.01 sec)
Records: 5  Duplicates: 0  Warnings: 0
```

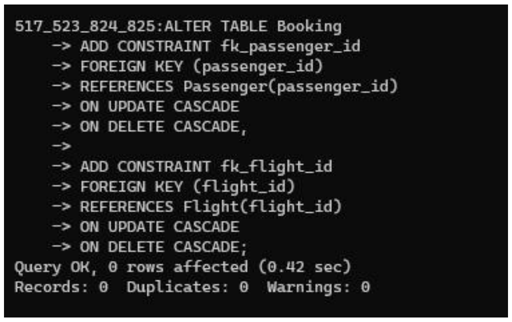


```
517_523_824_825:select * from passenger;
+--------------+------------+-----------+---------------------------+------------+-----------------+------------------+------------+
| passenger_id | first_name | last_name | email                     | phone      | seat_preference | class_preference | loyalty_id |
+--------------+------------+-----------+---------------------------+------------+-----------------+------------------+------------+
|            1 | John       | Doe       | john.doe@example.com      | 1234567890 | Window          | Economy          |       NULL |
|            2 | Jane       | Smith     | jane.smith@example.com    | 2345678901 | Aisle           | Business         |       NULL |
|            3 | Michael    | Brown     | michael.brown@example.com | 3456789012 | Window          | First            |       NULL |
|            4 | Emily      | Davis     | emily.davis@example.com   | 4567890123 | Aisle           | Economy          |       NULL |
|            5 | David      | Clark     | david.clark@example.com   | 5678901234 | Window          | Business         |       NULL |
+--------------+------------+-----------+---------------------------+------------+-----------------+------------------+------------+
5 rows in set (0.00 sec)
```

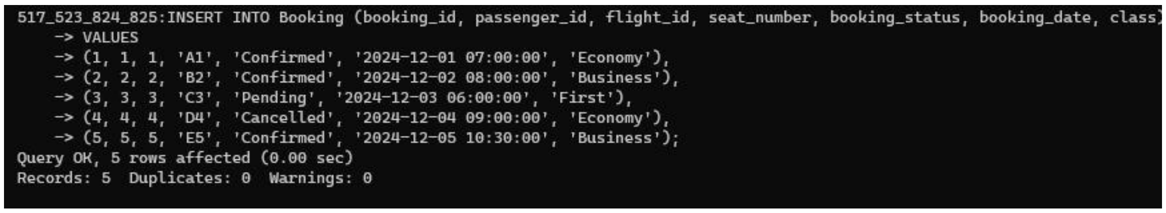
## BOOKING



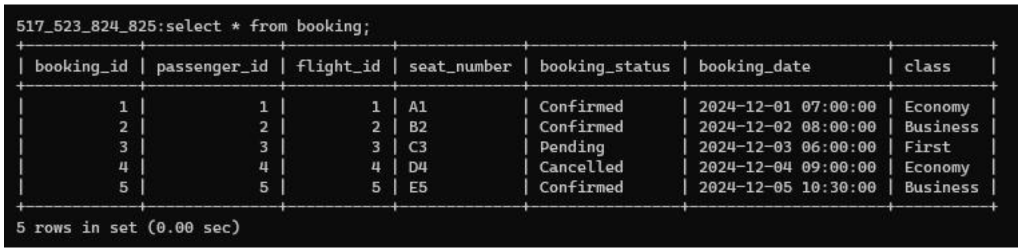
```
517_523_824_825:CREATE TABLE Booking (
    ->     booking_id INT PRIMARY KEY,
    ->     passenger_id INT NOT NULL,
    ->     flight_id INT NOT NULL,
    ->     seat_number VARCHAR(5),
    ->     booking_status ENUM('Confirmed', 'Canceled') DEFAULT 'Confirmed',
    ->     booking_date DATETIME NOT NULL DEFAULT CURRENT_TIMESTAMP,
    ->     class ENUM('Economy', 'Business', 'First') NOT NULL
    ->
    -> );
Query OK, 0 rows affected (0.05 sec)
```



```
517_523_824_825:ALTER TABLE Booking
    -> ADD CONSTRAINT fk_passenger_id
    -> FOREIGN KEY (passenger_id)
    -> REFERENCES Passenger(passenger_id)
    -> ON UPDATE CASCADE
    -> ON DELETE CASCADE,
    ->
    -> ADD CONSTRAINT fk_flight_id
    -> FOREIGN KEY (flight_id)
    -> REFERENCES Flight(flight_id)
    -> ON UPDATE CASCADE
    -> ON DELETE CASCADE;
Query OK, 0 rows affected (0.42 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

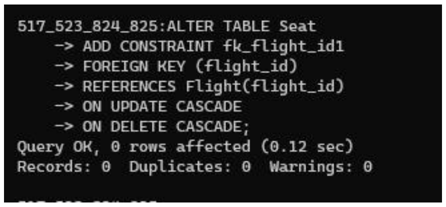


```
517_523_824_825:INSERT INTO Booking (booking_id, passenger_id, flight_id, seat_number, booking_status, booking_date, class)
    -> VALUES
    -> (1, 1, 1, 'A1', 'Confirmed', '2024-12-01 07:00:00', 'Economy'),
    -> (2, 2, 2, 'B2', 'Confirmed', '2024-12-02 08:00:00', 'Business'),
    -> (3, 3, 3, 'C3', 'Pending', '2024-12-03 06:00:00', 'First'),
    -> (4, 4, 4, 'D4', 'Cancelled', '2024-12-04 09:00:00', 'Economy'),
    -> (5, 5, 5, 'E5', 'Confirmed', '2024-12-05 10:30:00', 'Business');
Query OK, 5 rows affected (0.00 sec)
Records: 5  Duplicates: 0  Warnings: 0
```

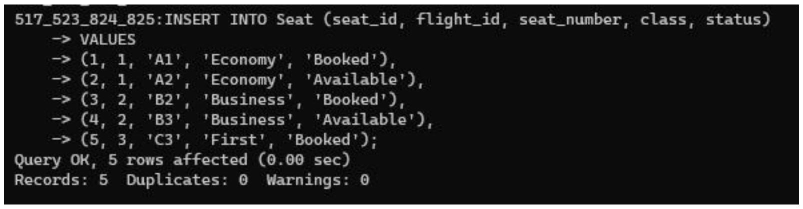


```
517_523_824_825:select * from booking;
+------------+--------------+-----------+-------------+----------------+---------------------+----------+
| booking_id | passenger_id | flight_id | seat_number | booking_status | booking_date        | class    |
+------------+--------------+-----------+-------------+----------------+---------------------+----------+
|          1 |            1 |         1 | A1          | Confirmed      | 2024-12-01 07:00:00 | Economy  |
|          2 |            2 |         2 | B2          | Confirmed      | 2024-12-02 08:00:00 | Business |
|          3 |            3 |         3 | C3          | Pending        | 2024-12-03 06:00:00 | First    |
|          4 |            4 |         4 | D4          | Cancelled      | 2024-12-04 09:00:00 | Economy  |
|          5 |            5 |         5 | E5          | Confirmed      | 2024-12-05 10:30:00 | Business |
+------------+--------------+-----------+-------------+----------------+---------------------+----------+
5 rows in set (0.00 sec)
```

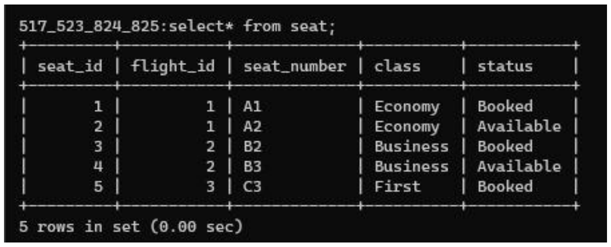
## SEATING



```
517_523_824_825:ALTER TABLE Seat
    -> ADD CONSTRAINT fk_flight_id1
    -> FOREIGN KEY (flight_id)
    -> REFERENCES Flight(flight_id)
    -> ON UPDATE CASCADE
    -> ON DELETE CASCADE;
Query OK, 0 rows affected (0.12 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

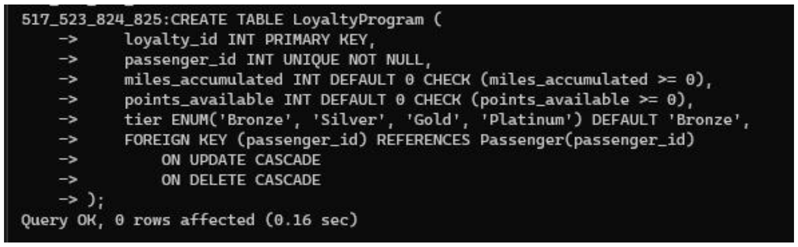


```
517_523_824_825:INSERT INTO Seat (seat_id, flight_id, seat_number, class, status)
    -> VALUES
    -> (1, 1, 'A1', 'Economy', 'Booked'),
    -> (2, 1, 'A2', 'Economy', 'Available'),
    -> (3, 2, 'B2', 'Business', 'Booked'),
    -> (4, 2, 'B3', 'Business', 'Available'),
    -> (5, 3, 'C3', 'First', 'Booked');
Query OK, 5 rows affected (0.00 sec)
Records: 5  Duplicates: 0  Warnings: 0
```

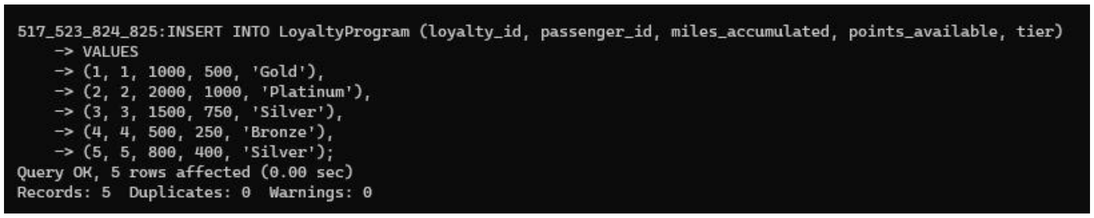


```
517_523_824_825:select* from seat;
+---------+-----------+-------------+----------+-----------+
| seat_id | flight_id | seat_number | class    | status    |
+---------+-----------+-------------+----------+-----------+
|       1 |         1 | A1          | Economy  | Booked    |
|       2 |         1 | A2          | Economy  | Available |
|       3 |         2 | B2          | Business | Booked    |
|       4 |         2 | B3          | Business | Available |
|       5 |         3 | C3          | First    | Booked    |
+---------+-----------+-------------+----------+-----------+
5 rows in set (0.00 sec)
```

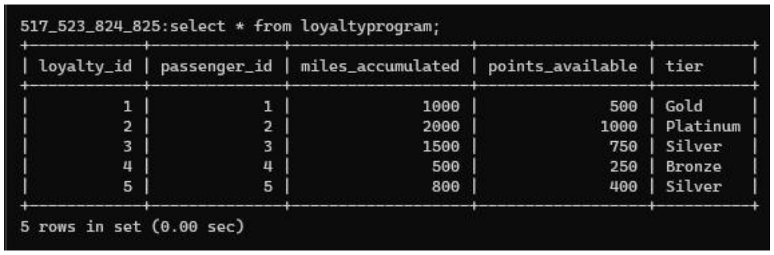
## LOYALTY PROGRAM



```
517_523_824_825:CREATE TABLE LoyaltyProgram (
    ->     loyalty_id INT PRIMARY KEY,
    ->     passenger_id INT UNIQUE NOT NULL,
    ->     miles_accumulated INT DEFAULT 0 CHECK (miles_accumulated >= 0),
    ->     points_available INT DEFAULT 0 CHECK (points_available >= 0),
    ->     tier ENUM('Bronze', 'Silver', 'Gold', 'Platinum') DEFAULT 'Bronze',
    ->     FOREIGN KEY (passenger_id) REFERENCES Passenger(passenger_id)
    ->         ON UPDATE CASCADE
    ->         ON DELETE CASCADE
    -> );
Query OK, 0 rows affected (0.16 sec)
```



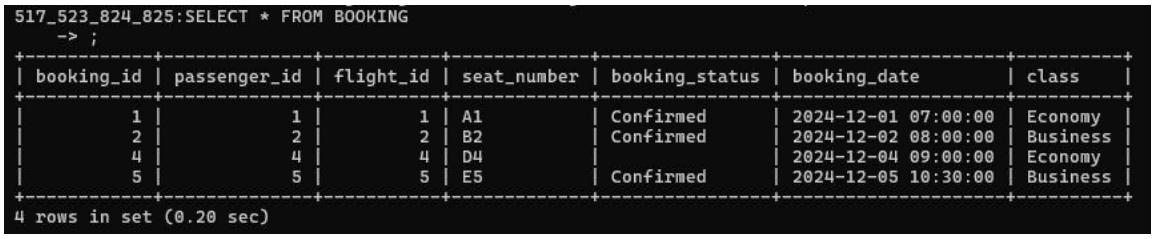
```
517_523_824_825:INSERT INTO LoyaltyProgram (loyalty_id, passenger_id, miles_accumulated, points_available, tier)
    -> VALUES
    -> (1, 1, 1000, 500, 'Gold'),
    -> (2, 2, 2000, 1000, 'Platinum'),
    -> (3, 3, 1500, 750, 'Silver'),
    -> (4, 4, 500, 250, 'Bronze'),
    -> (5, 5, 800, 400, 'Silver');
Query OK, 5 rows affected (0.00 sec)
Records: 5  Duplicates: 0  Warnings: 0
```



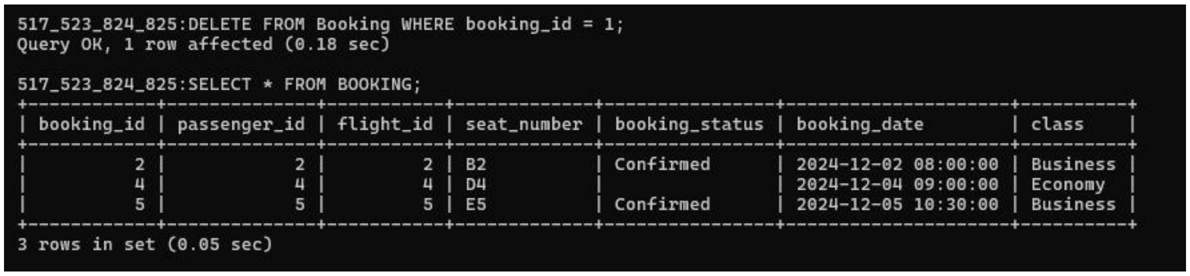
```
517_523_824_825:select * from loyaltyprogram;
+------------+--------------+-------------------+------------------+----------+
| loyalty_id | passenger_id | miles_accumulated | points_available | tier     |
+------------+--------------+-------------------+------------------+----------+
|          1 |            1 |              1000 |              500 | Gold     |
|          2 |            2 |              2000 |             1000 | Platinum |
|          3 |            3 |              1500 |              750 | Silver   |
|          4 |            4 |               500 |              250 | Bronze   |
|          5 |            5 |               800 |              400 | Silver   |
+------------+--------------+-------------------+------------------+----------+
5 rows in set (0.00 sec)
```

## QUESTION 4

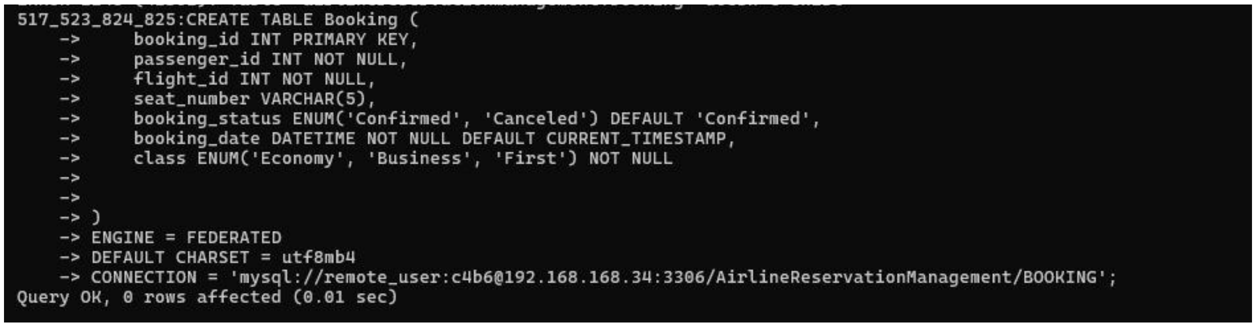
### LOCAL HOST



```
517_523_824_825:SELECT * FROM BOOKING
    -> ;
+------------+--------------+-----------+-------------+----------------+---------------------+----------+
| booking_id | passenger_id | flight_id | seat_number | booking_status | booking_date        | class    |
+------------+--------------+-----------+-------------+----------------+---------------------+----------+
|          1 |            1 |         1 | A1          | Confirmed      | 2024-12-01 07:00:00 | Economy  |
|          2 |            2 |         2 | B2          | Confirmed      | 2024-12-02 08:00:00 | Business |
|          4 |            4 |         4 | D4          |                | 2024-12-04 09:00:00 | Economy  |
|          5 |            5 |         5 | E5          | Confirmed      | 2024-12-05 10:30:00 | Business |
+------------+--------------+-----------+-------------+----------------+---------------------+----------+
4 rows in set (0.20 sec)
```

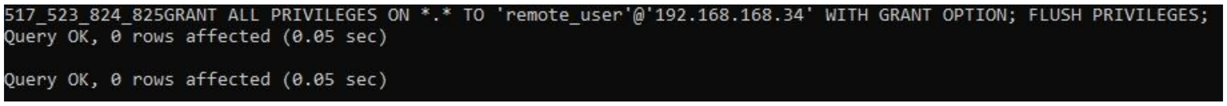


```
517_523_824_825:DELETE FROM Booking WHERE booking_id = 1;
Query OK, 1 row affected (0.18 sec)

517_523_824_825:SELECT * FROM BOOKING;
+------------+--------------+-----------+-------------+----------------+---------------------+----------+
| booking_id | passenger_id | flight_id | seat_number | booking_status | booking_date        | class    |
+------------+--------------+-----------+-------------+----------------+---------------------+----------+
|          2 |            2 |         2 | B2          | Confirmed      | 2024-12-02 08:00:00 | Business |
|          4 |            4 |         4 | D4          |                | 2024-12-04 09:00:00 | Economy  |
|          5 |            5 |         5 | E5          | Confirmed      | 2024-12-05 10:30:00 | Business |
+------------+--------------+-----------+-------------+----------------+---------------------+----------+
3 rows in set (0.05 sec)
```

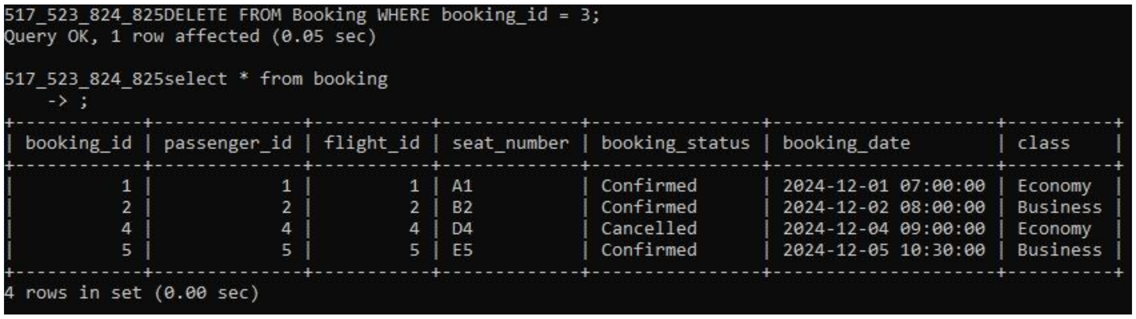


```
517_523_824_825:CREATE TABLE Booking (
    ->     booking_id INT PRIMARY KEY,
    ->     passenger_id INT NOT NULL,
    ->     flight_id INT NOT NULL,
    ->     seat_number VARCHAR(5),
    ->     booking_status ENUM('Confirmed', 'Canceled') DEFAULT 'Confirmed',
    ->     booking_date DATETIME NOT NULL DEFAULT CURRENT_TIMESTAMP,
    ->     class ENUM('Economy', 'Business', 'First') NOT NULL
    ->
    ->
    -> )
    -> ENGINE = FEDERATED
    -> DEFAULT CHARSET = utf8mb4
    -> CONNECTION = 'mysql://remote_user:c4b6@192.168.168.34:3306/AirlineReservationManagement/BOOKING';
Query OK, 0 rows affected (0.01 sec)
```

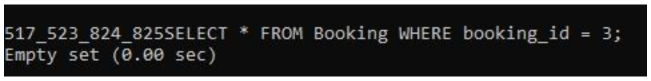
### REMOTE HOST



```
517_523_824_825GRANT ALL PRIVILEGES ON *.* TO 'remote_user'@'192.168.168.34' WITH GRANT OPTION; FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.05 sec)

Query OK, 0 rows affected (0.05 sec)
```

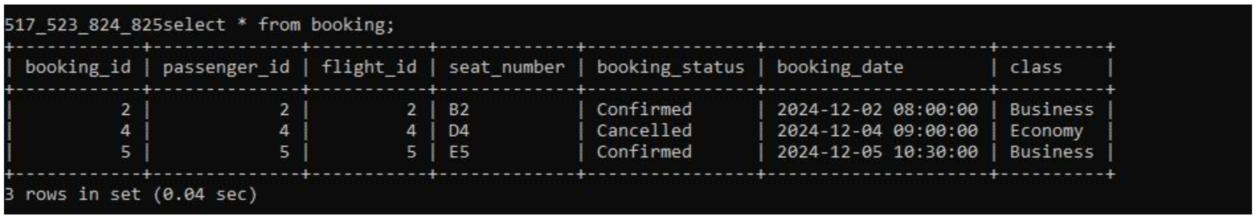


```
517_523_824_825DELETE FROM Booking WHERE booking_id = 3;
Query OK, 1 row affected (0.05 sec)

517_523_824_825select * from booking
    -> ;
+------------+--------------+-----------+-------------+----------------+---------------------+----------+
| booking_id | passenger_id | flight_id | seat_number | booking_status | booking_date        | class    |
+------------+--------------+-----------+-------------+----------------+---------------------+----------+
|          1 |            1 |         1 | A1          | Confirmed      | 2024-12-01 07:00:00 | Economy  |
|          2 |            2 |         2 | B2          | Confirmed      | 2024-12-02 08:00:00 | Business |
|          4 |            4 |         4 | D4          | Cancelled      | 2024-12-04 09:00:00 | Economy  |
|          5 |            5 |         5 | E5          | Confirmed      | 2024-12-05 10:30:00 | Business |
+------------+--------------+-----------+-------------+----------------+---------------------+----------+
4 rows in set (0.00 sec)
```



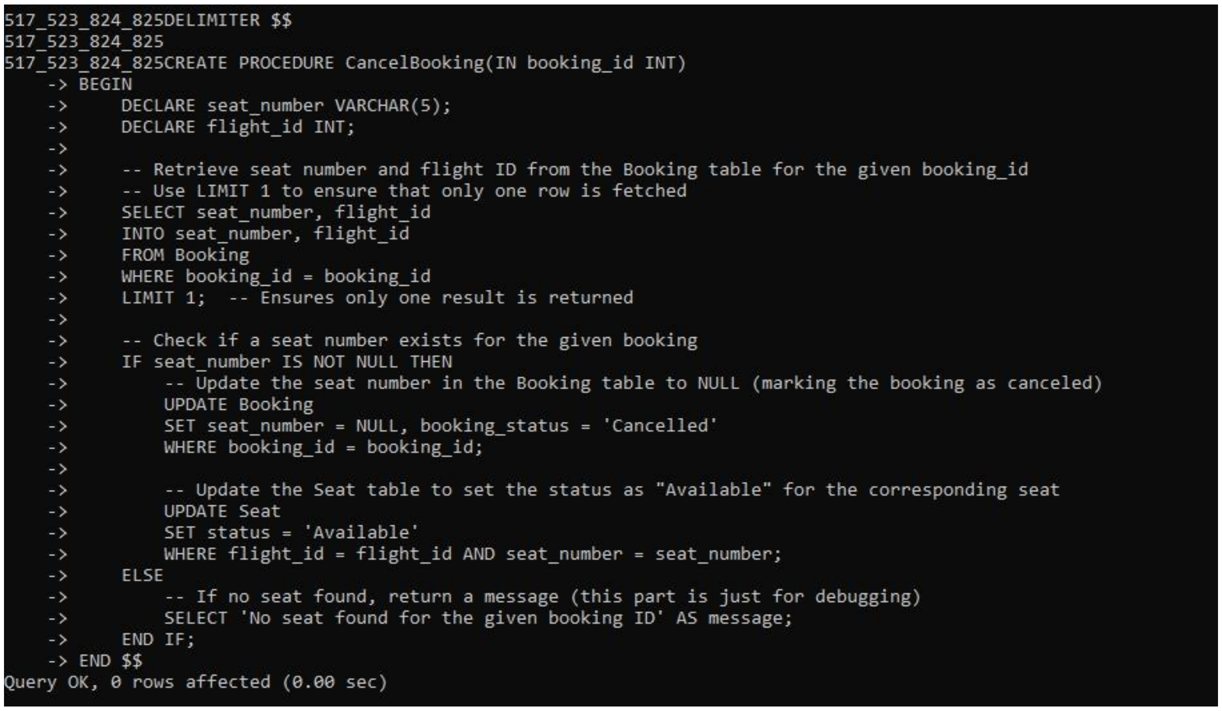
```
517_523_824_825SELECT * FROM Booking WHERE booking_id = 3;
Empty set (0.00 sec)
```

**AFTER DELETING ROW (ID=1) FROM BOOKING TABLE FROM LOCAL HOST**

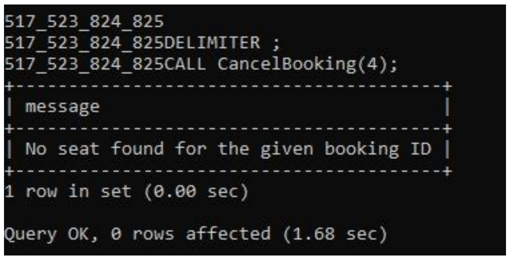


```
517_523_824_825select * from booking;
+------------+--------------+-----------+-------------+----------------+---------------------+----------+
| booking_id | passenger_id | flight_id | seat_number | booking_status | booking_date        | class    |
+------------+--------------+-----------+-------------+----------------+---------------------+----------+
|          2 |            2 |         2 | B2          | Confirmed      | 2024-12-02 08:00:00 | Business |
|          4 |            4 |         4 | D4          | Cancelled      | 2024-12-04 09:00:00 | Economy  |
|          5 |            5 |         5 | E5          | Confirmed      | 2024-12-05 10:30:00 | Business |
+------------+--------------+-----------+-------------+----------------+---------------------+----------+
3 rows in set (0.04 sec)
```

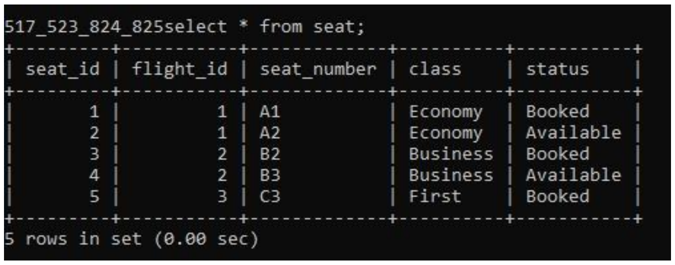
## QUESTION 5



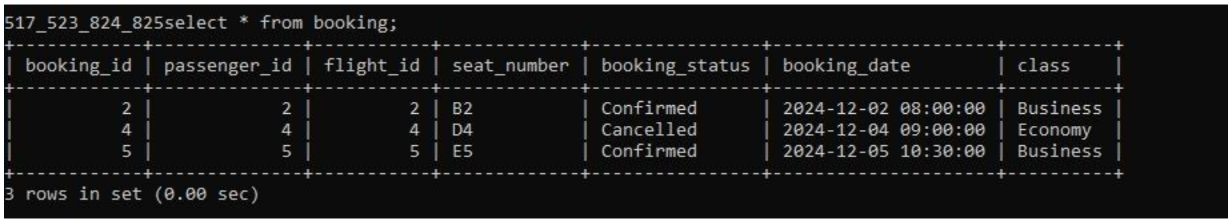
```
517_523_824_825DELIMITER $$
517_523_824_825
517_523_824_825CREATE PROCEDURE CancelBooking(IN booking_id INT)
    -> BEGIN
    ->     DECLARE seat_number VARCHAR(5);
    ->     DECLARE flight_id INT;
    ->
    ->     -- Retrieve seat number and flight ID from the Booking table for the given booking_id
    ->     -- Use LIMIT 1 to ensure that only one row is fetched
    ->     SELECT seat_number, flight_id
    ->     INTO seat_number, flight_id
    ->     FROM Booking
    ->     WHERE booking_id = booking_id
    ->     LIMIT 1;  -- Ensures only one result is returned
    ->
    ->     -- Check if a seat number exists for the given booking
    ->     IF seat_number IS NOT NULL THEN
    ->         -- Update the seat number in the Booking table to NULL (marking the booking as canceled)
    ->         UPDATE Booking
    ->         SET seat_number = NULL, booking_status = 'Cancelled'
    ->         WHERE booking_id = booking_id;
    ->
    ->         -- Update the Seat table to set the status as "Available" for the corresponding seat
    ->         UPDATE Seat
    ->         SET status = 'Available'
    ->         WHERE flight_id = flight_id AND seat_number = seat_number;
    ->     ELSE
    ->         -- If no seat found, return a message (this part is just for debugging)
    ->         SELECT 'No seat found for the given booking ID' AS message;
    ->     END IF;
    -> END $$
Query OK, 0 rows affected (0.00 sec)
```



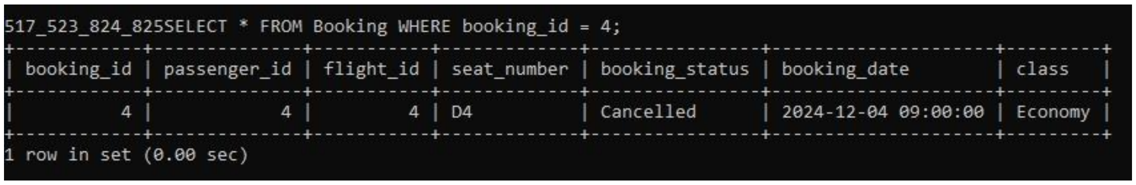
```
517_523_824_825
517_523_824_825DELIMITER ;
517_523_824_825CALL CancelBooking(4);
+----------------------------------------+
| message                                |
+----------------------------------------+
| No seat found for the given booking ID |
+----------------------------------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (1.68 sec)
```



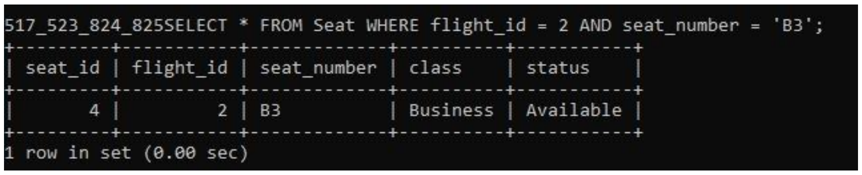
```
517_523_824_825select * from seat;
+---------+-----------+-------------+----------+-----------+
| seat_id | flight_id | seat_number | class    | status    |
+---------+-----------+-------------+----------+-----------+
|       1 |         1 | A1          | Economy  | Booked    |
|       2 |         1 | A2          | Economy  | Available |
|       3 |         2 | B2          | Business | Booked    |
|       4 |         2 | B3          | Business | Available |
|       5 |         3 | C3          | First    | Booked    |
+---------+-----------+-------------+----------+-----------+
5 rows in set (0.00 sec)
```



```
517_523_824_825select * from booking;
+------------+--------------+-----------+-------------+----------------+---------------------+----------+
| booking_id | passenger_id | flight_id | seat_number | booking_status | booking_date        | class    |
+------------+--------------+-----------+-------------+----------------+---------------------+----------+
|          2 |            2 |         2 | B2          | Confirmed      | 2024-12-02 08:00:00 | Business |
|          4 |            4 |         4 | D4          | Cancelled      | 2024-12-04 09:00:00 | Economy  |
|          5 |            5 |         5 | E5          | Confirmed      | 2024-12-05 10:30:00 | Business |
+------------+--------------+-----------+-------------+----------------+---------------------+----------+
3 rows in set (0.00 sec)
```

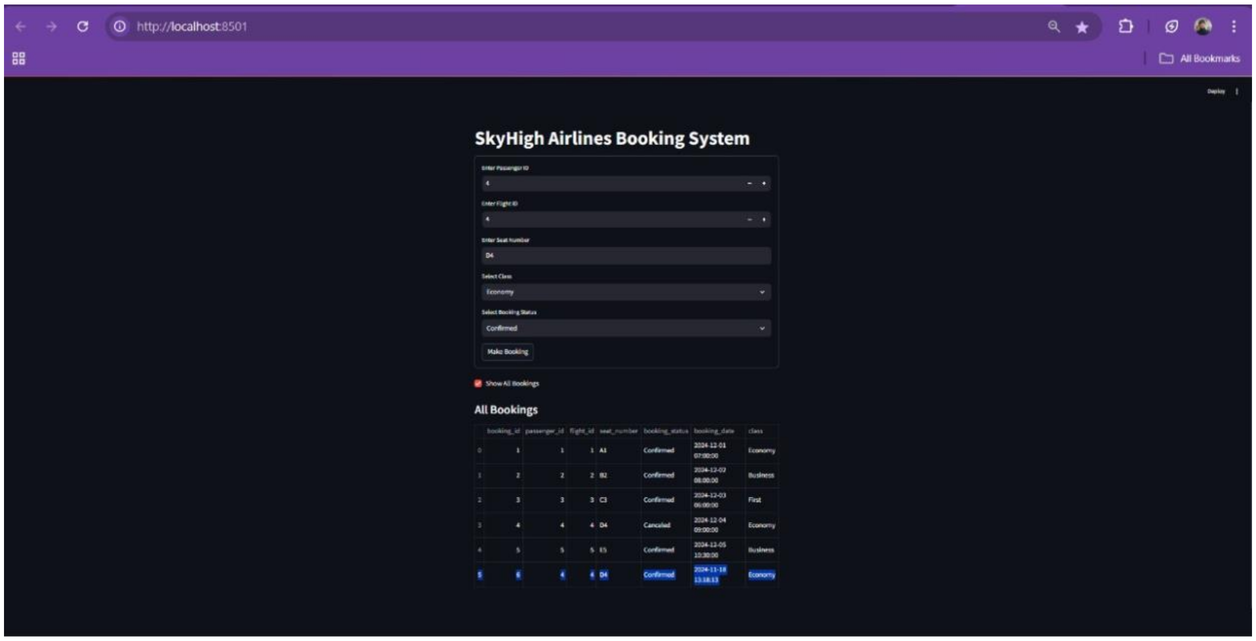


```
517_523_824_825SELECT * FROM Booking WHERE booking_id = 4;
+------------+--------------+-----------+-------------+----------------+---------------------+---------+
| booking_id | passenger_id | flight_id | seat_number | booking_status | booking_date        | class   |
+------------+--------------+-----------+-------------+----------------+---------------------+---------+
|          4 |            4 |         4 | D4          | Cancelled      | 2024-12-04 09:00:00 | Economy |
+------------+--------------+-----------+-------------+----------------+---------------------+---------+
1 row in set (0.00 sec)
```



```
517_523_824_825SELECT * FROM Seat WHERE flight_id = 2 AND seat_number = 'B3';
+---------+-----------+-------------+----------+-----------+
| seat_id | flight_id | seat_number | class    | status    |
+---------+-----------+-------------+----------+-----------+
|       4 |         2 | B3          | Business | Available |
+---------+-----------+-------------+----------+-----------+
1 row in set (0.00 sec)
```

## QUESTION 6



**SkyHigh Airlines Booking System**

Enter Passenger ID: 4

Enter Flight ID: 4

Enter Seat Number: D4

Select Class: Economy

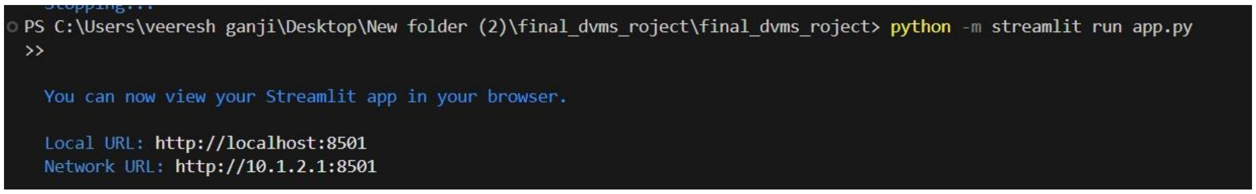
Select Booking Status: Confirmed

Make Booking

Show All Bookings

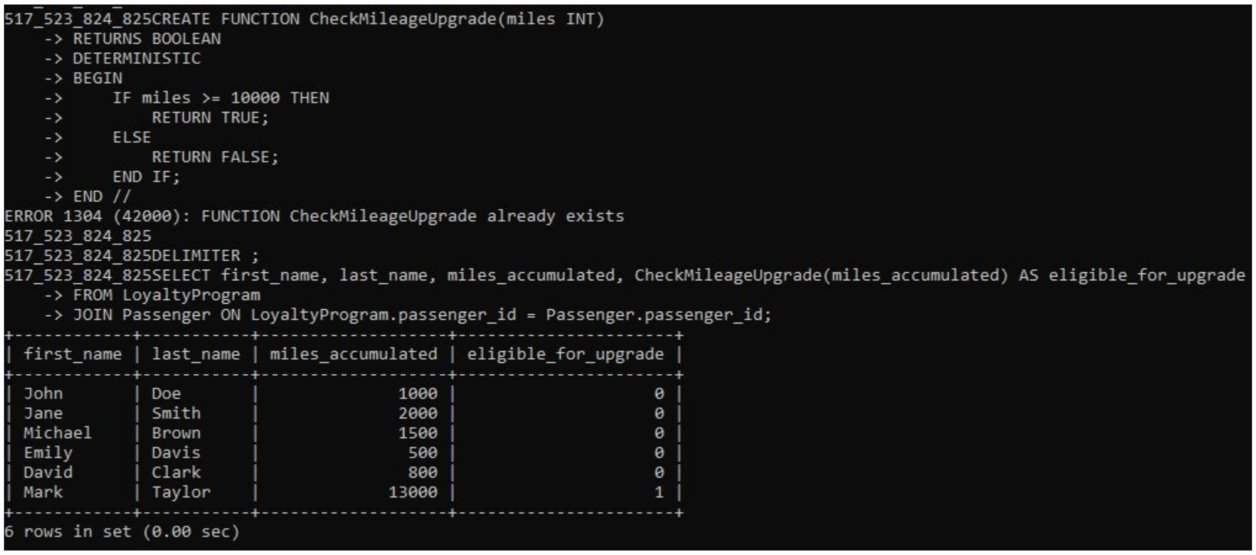
**All Bookings**

| | booking_id | passenger_id | flight_id | seat_number | booking_status | booking_date | class |
|---|---|---|---|---|---|---|---|
| 0 | 1 | 1 | 1 | A1 | Confirmed | 2024-12-01 07:00:00 | Economy |
| 1 | 2 | 2 | 2 | B2 | Confirmed | 2024-12-02 08:00:00 | Business |
| 2 | 3 | 3 | 3 | C3 | Confirmed | 2024-12-03 06:00:00 | First |
| 3 | 4 | 4 | 4 | D4 | Canceled | 2024-12-04 09:00:00 | Economy |
| 4 | 5 | 5 | 5 | E5 | Confirmed | 2024-12-05 10:30:00 | Business |
| 5 | 6 | 4 | 4 | D4 | Confirmed | 2024-11-18 13:18:13 | Economy |



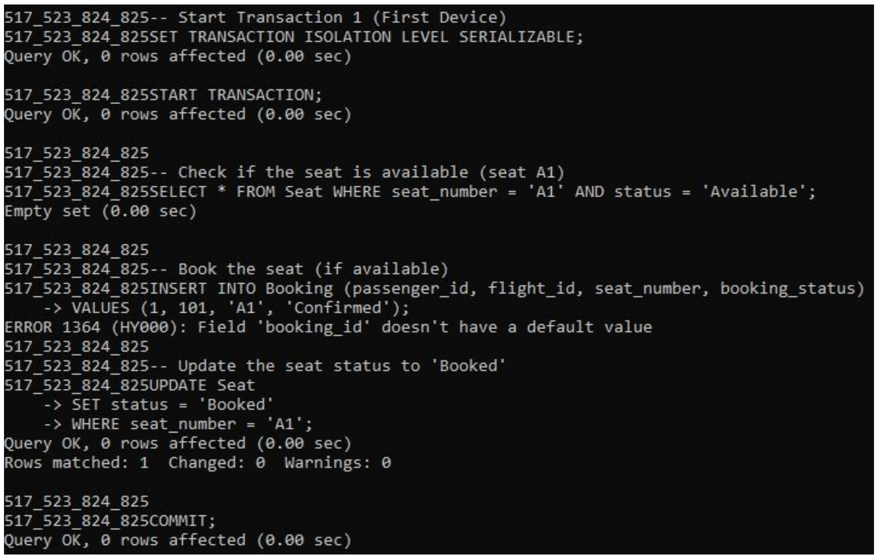
```
PS C:\Users\veeresh ganji\Desktop\New folder (2)\final_dvms_roject\final_dvms_roject> python -m streamlit run app.py
>>

  You can now view your Streamlit app in your browser.

  Local URL: http://localhost:8501
  Network URL: http://10.1.2.1:8501
```

## QUESTION 7

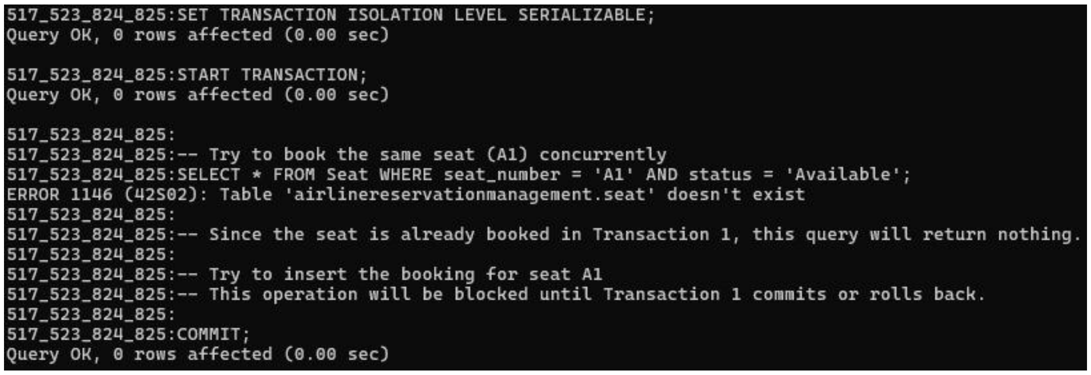


```
517_523_824_825CREATE FUNCTION CheckMileageUpgrade(miles INT)
    -> RETURNS BOOLEAN
    -> DETERMINISTIC
    -> BEGIN
    ->     IF miles >= 10000 THEN
    ->         RETURN TRUE;
    ->     ELSE
    ->         RETURN FALSE;
    ->     END IF;
    -> END //
ERROR 1304 (42000): FUNCTION CheckMileageUpgrade already exists
517_523_824_825
517_523_824_825DELIMITER ;
517_523_824_825SELECT first_name, last_name, miles_accumulated, CheckMileageUpgrade(miles_accumulated) AS eligible_for_upgrade
    -> FROM LoyaltyProgram
    -> JOIN Passenger ON LoyaltyProgram.passenger_id = Passenger.passenger_id;
+------------+-----------+-------------------+----------------------+
| first_name | last_name | miles_accumulated | eligible_for_upgrade |
+------------+-----------+-------------------+----------------------+
| John       | Doe       |              1000 |                    0 |
| Jane       | Smith     |              2000 |                    0 |
| Michael    | Brown     |              1500 |                    0 |
| Emily      | Davis     |               500 |                    0 |
| David      | Clark     |               800 |                    0 |
| Mark       | Taylor    |             13000 |                    1 |
+------------+-----------+-------------------+----------------------+
6 rows in set (0.00 sec)
```

## QUESTION 8

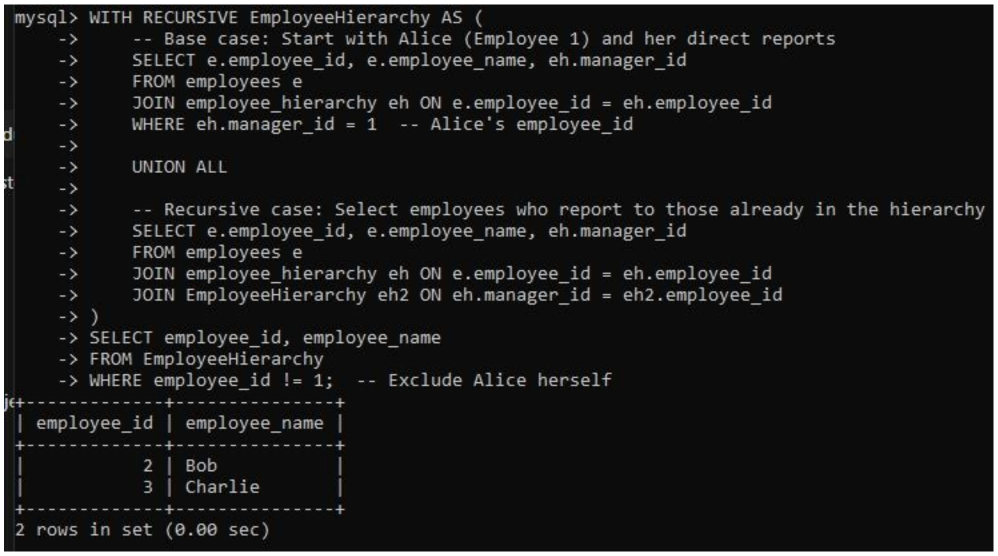


```
517_523_824_825-- Start Transaction 1 (First Device)
517_523_824_825SET TRANSACTION ISOLATION LEVEL SERIALIZABLE;
Query OK, 0 rows affected (0.00 sec)

517_523_824_825START TRANSACTION;
Query OK, 0 rows affected (0.00 sec)

517_523_824_825
517_523_824_825-- Check if the seat is available (seat A1)
517_523_824_825SELECT * FROM Seat WHERE seat_number = 'A1' AND status = 'Available';
Empty set (0.00 sec)

517_523_824_825
517_523_824_825-- Book the seat (if available)
517_523_824_825INSERT INTO Booking (passenger_id, flight_id, seat_number, booking_status)
    -> VALUES (1, 101, 'A1', 'Confirmed');
ERROR 1364 (HY000): Field 'booking_id' doesn't have a default value
517_523_824_825
517_523_824_825-- Update the seat status to 'Booked'
517_523_824_825UPDATE Seat
    -> SET status = 'Booked'
    -> WHERE seat_number = 'A1';
Query OK, 0 rows affected (0.00 sec)
Rows matched: 1  Changed: 0  Warnings: 0

517_523_824_825
517_523_824_825COMMIT;
Query OK, 0 rows affected (0.00 sec)
```



```
517_523_824_825:SET TRANSACTION ISOLATION LEVEL SERIALIZABLE;
Query OK, 0 rows affected (0.00 sec)

517_523_824_825:START TRANSACTION;
Query OK, 0 rows affected (0.00 sec)

517_523_824_825:
517_523_824_825:-- Try to book the same seat (A1) concurrently
517_523_824_825:SELECT * FROM Seat WHERE seat_number = 'A1' AND status = 'Available';
ERROR 1146 (42S02): Table 'airlinereservationmanagement.seat' doesn't exist
517_523_824_825:
517_523_824_825:-- Since the seat is already booked in Transaction 1, this query will return nothing.
517_523_824_825:
517_523_824_825:-- Try to insert the booking for seat A1
517_523_824_825:-- This operation will be blocked until Transaction 1 commits or rolls back.
517_523_824_825:
517_523_824_825:COMMIT;
Query OK, 0 rows affected (0.00 sec)
```

## QUESTION 9



```
mysql> WITH RECURSIVE EmployeeHierarchy AS (
    ->     -- Base case: Start with Alice (Employee 1) and her direct reports
    ->     SELECT e.employee_id, e.employee_name, eh.manager_id
    ->     FROM employees e
    ->     JOIN employee_hierarchy eh ON e.employee_id = eh.employee_id
    ->     WHERE eh.manager_id = 1  -- Alice's employee_id
    ->
    ->     UNION ALL
    ->
    ->     -- Recursive case: Select employees who report to those already in the hierarchy
    ->     SELECT e.employee_id, e.employee_name, eh.manager_id
    ->     FROM employees e
    ->     JOIN employee_hierarchy eh ON e.employee_id = eh.employee_id
    ->     JOIN EmployeeHierarchy eh2 ON eh.manager_id = eh2.employee_id
    -> )
    -> SELECT employee_id, employee_name
    -> FROM EmployeeHierarchy
    -> WHERE employee_id != 1;  -- Exclude Alice herself
+-------------+---------------+
| employee_id | employee_name |
+-------------+---------------+
|           2 | Bob           |
|           3 | Charlie       |
+-------------+---------------+
2 rows in set (0.00 sec)
```