PROJECT-5 (MySQL)

Project Title: Airline Management and Customer Analysis

Project Overview: This project involves managing and analyzing data related to airline operations, customer details, ticket sales, and flight routes using MySQL queries. The dataset encompasses information on passengers, flights, routes, ticket details, and customer demographics. The objective is to derive insights into customer preferences, flight patterns, revenue generation, and to facilitate efficient airline management and customer relationship management.

Database Schema:

- **passengers_on_flights**: Contains details about passengers, flights, routes, seating, class, and travel dates.
- **ticket_details**: Provides information on ticket sales including purchase dates, customer IDs, aircraft IDs, class IDs, number of tickets, prices, and airline brands.
- **customer**: Stores customer information such as customer ID, first name, last name, date of birth, and gender.
- **routes**: Includes flight routes with details on route IDs, flight numbers, origin and destination airports, aircraft IDs, and distance in miles.

Tasks and Analysis:

1. **Passenger Analysis**:
    - Retrieving all entries from the "passengers_on_flights" table to understand passenger and flight details.
    - Selecting customer IDs from "passengers_on_flights" for routes between 1 and 25.
2. **Revenue Analysis**:
    - Calculating total number of passengers and total revenue from "ticket_details" for passengers in Business class.
3. **Customer Name Concatenation**:

    - Concatenating first name and last name from the "customer" table to display customer names.
4. **Customer and Ticket Details**:
    - Joining "customer" and "ticket_details" tables to fetch detailed information about customers and their ticket purchases.
5. **Brand Specific Analysis**:
    - Selecting all entries from "ticket_details" and retrieving customer names who purchased tickets from the 'Emirates' brand.
6. **Flight Class and Frequency**:
    - Counting the number of flights ("passengers_on_flights") per customer in 'Economy Plus' class where the count is greater than zero.
7. **Revenue Threshold Check**:
    - Using an IF statement to determine if the total revenue from "ticket_details" exceeds $10,000.
8. **User Management**:
    - Creating a new MySQL user 'new_user' with specific privileges for the 'aircargo' database.
9. **Class-wise Maximum Ticket Price**:
    - Finding the maximum ticket price per class from "ticket_details" grouped by class ID.
10. **Route-specific Analysis**:
    - Selecting all details from "passengers_on_flights" for flights on route ID 4.
11. **Query Optimization**:
    - Using EXPLAIN to analyze the query plan for selecting passengers on flights for route ID 4 to optimize performance.
12. **Customer-wise Price Summary**:
    - Calculating the total price of tickets purchased by each customer from "ticket_details" with a ROLLUP.
13. **View Creation**:
    - Creating a view "business_class_customers" to list customers who purchased tickets in the 'Business' class from "customer" and "ticket_details" tables.
14. **Stored Procedure Creation**:

- Developing a stored procedure "get_passenger_details" to fetch passengers on flights within a specified route ID range, handling scenarios where no routes are found.

15. **Long Distance Routes**:
    - Creating a stored procedure "get_long_distance_routes" to list routes from "routes" where the distance exceeds 2000 miles.
16. **Flight Distance Categorization**:
    - Defining a stored procedure "group_flight_distance" to categorize routes into Short Distance (SDT), Intermediate Distance (IDT), and Long Distance (LDT) based on their miles.
17. **Function Creation**:
    - Creating a function "check_complimentary_services" to determine if complimentary services are available based on the class ID ('Business' or 'Economy Plus').
18. **Cursor Usage**:
    - Writing a stored procedure "find_customer_with_scott" using a cursor to find and display customer names ending with 'Scott' from the "customer" table.

Conclusion: This project showcases the application of MySQL for managing and analyzing airline operations data, customer information, and flight details. By leveraging SQL queries, views, stored procedures, functions, and user management, the project aims to provide actionable insights into customer behavior, revenue streams, flight performance, and operational efficiency. The structured approach ensures effective data handling, query optimization, and user access control, essential for streamlined airline management and customer-centric service delivery.