Nimbus DB: Airline Database Management System

IMPLEMENTATION

Below are the commands implemented:

1. INSERT A NEW ENTRY

   Users are asked to choose the type of insertion and corresponding details are taken as input from the user. For instance, if the user selects 'Employee,' it collects various employee details (ID, name, DOB, etc.) via user input, constructs an SQL query to insert this data into an 'Employee' table in the database, and executes the query.
   The code includes error handling to rollback changes in case of exceptions during insertion and outputs relevant error messages.
   Commands:
   1. **Employee:** Add new employee record.
   2. **Flight Schedule:** Insert new flight schedule details.
   3. **Aircraft:** Add new aircraft information.
   4. **Passenger:** Insert new passenger data.
   5. **Meal:** Add new meal information.
   6. **Ticket:** Insert new ticket details.
   7. **Rating:** Add new rating information.
   8. **Airport:** Insert new airport record.

2. DELETE AN EXISTING ENTRY

   The code allows the user to delete various data entries related to employees, tickets, and baggage.
   1. **Cancel Ticket**: Cancels a ticket by deleting associated records for ratings, baggage, booking, and the ticket itself for a given flight and seat.
   2. **Delete Employee**: Deletes employee-related data based on the given `EmployeeID`, considering different job types (e.g., Technician, Pilot, Ground Staff, Flight Attendant).
   3. **Delete Baggage**: Deletes a particular baggage for a particular ticket

3. UPDATE RECORDS

   Provides a menu prompting users to select the type of information they want to update based on the provided options and updates the required information.
   1. **Pilot info**: Updates pilot details such as flight hours and aircraft type rating.
   2. **Flight attendant supervisor**: Updates flight attendant details with a new supervisor ID.
   3. **Flight details**: Allows updates to flight schedules, status, and aircraft

assignment.
4. **Distance travelled**: Updates the distance travelled for an aircraft.
5. **Passenger info**: Enables updates to passenger details like nationality, ID type, and email.
6. **Airport info**: Manages updates to airport information including name, type, address, gates, and belts.
7. **Ticket details**: Updates ticket information such as baggage, category, and price.

4. RETRIEVE INFORMATION

The code provides the following retrieval options:
1. **Ground Staff Attributes in an Airport**: Retrieves attributes (EmployeeID, Role, Work Shift) of ground staff members working at a specified airport.
2. **Passenger Details in a Flight**: Fetches details of all passengers in a particular flight based on the flight number provided by the user.
3. **Technicians and Specializations**: Retrieves the names of technicians along with their respective specializations.
4. **Menu Planning for Meals**: Lists vendors and prices for menu planning of meals by fetching data from the Meals and Dishes tables.
5. **Aircraft IDs with Capacity Greater Than X**: Retrieves Aircraft IDs with a capacity greater than or equal to a user-defined minimum passenger capacity.
6. **Average Rating for Scheduled Flights**: Calculates the average rating for each flight based on passenger ratings.

5. SEARCH FOR ENTRIES

The code enables users to search for specific information based on different criteria:
1. **Aircrafts purchased in a particular year**: Takes user input for a year and retrieves aircraft details purchased in that year.
2. **Meals that are VEG for a specific Flight**: Requires a Flight ID as input and retrieves details of vegetarian meals served on that flight.
3**. Flight Attendants based on a spoken language**: Allows users to input a language and retrieves details of flight attendants who speak that language.

6. VIEW ANALYSIS

The code executes specific analysis queries against a database by presenting a menu to the user to choose which analysis they want to perform.
The functionalities it provides:
1. **Get busiest airports**: Retrieves information about the top three busiest airports based on the count of departing and arriving flights.
2. **Find airport with longest delay**: Identifies the airport with the longest average flight delay time by comparing scheduled departure and actual

departure times.
3. **Service quality**: Evaluates the service quality of flight attendants based on passenger ratings.

7. VIEW CURRENT STATE OF TABLES
   1. **Airports**: Displays all details of registered airports
   2. **Employee**: Displays all details of all the employees in the airline company
   3. **Flights**: Displays details of all flights (E.g. Scheduled arrival time etc)
   4. **Ticket**: Displays all tickets booked with the airline