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1. Introduction

This document outlines the database design for a luggage sharing system using MariaDB. It includes tables for storing flight details, luggage details, passenger information, sharing preferences, and shared luggage.

2. Purpose

Have you ever been to any airport and have an overweight luggage? The employee at the counter will ask you either to pay more or to rearrange your luggage.

The purpose of this database is to enable luggage sharing between passengers based on their flight schedules. It allows passengers to specify their luggage details, share preferences, and view shared luggage opportunities with other passengers. This will help not just the passengers but also Airline companies to implement such a feature within their online booking system for an additional fee.

3. Database

The database will consist mainly of **five** tables:

- Passenger information
- Flight details
- Luggage details (owned by passengers)
- Luggage sharing preferences
- Shared luggage

4. Entity-Relationship Diagram (ERD)

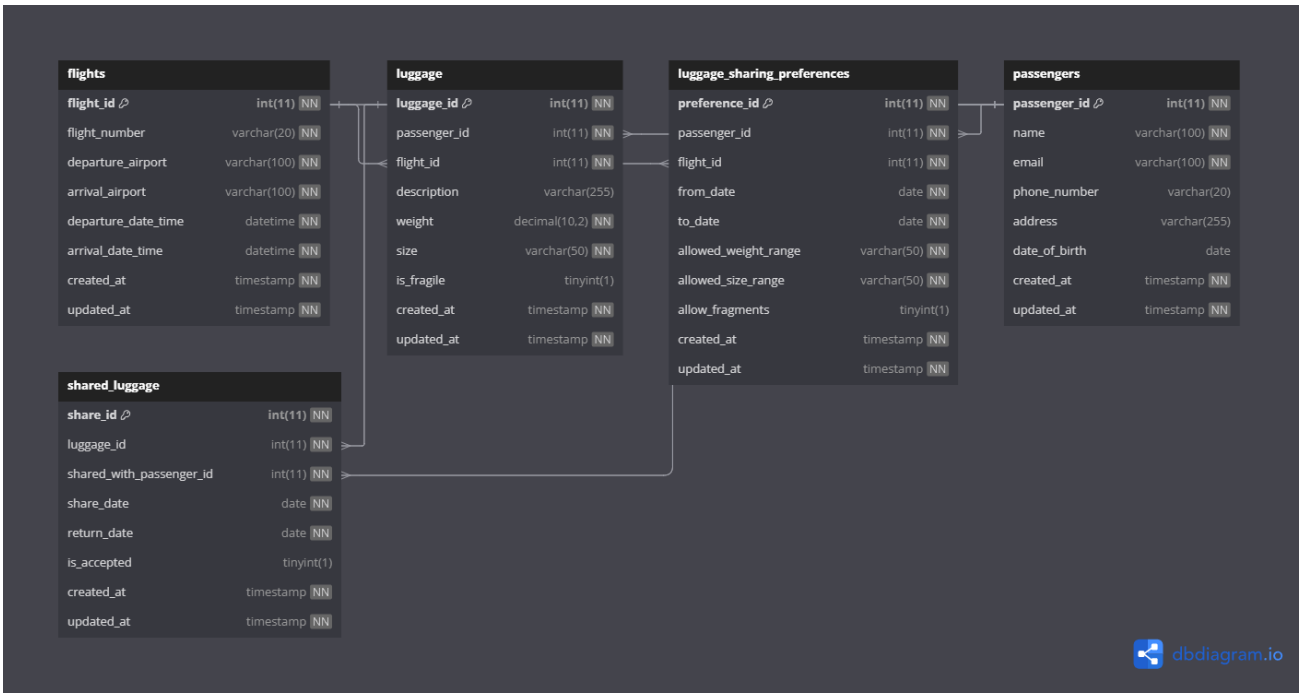

Figure 1 Entity Relationship Diagram (ERD)

5. Tables and Fields Description

5.1 Passengers

Column	Description
passenger_id (Primary Key)	Unique identifier for each passenger
name	Name of the passenger
email	Email address
phone	Phone number
address	Physical Address
date_of_birth	Date of birth
created_at	Timestamp of when the record was created
updated_at	Timestamp of when the record was update

Table 1 Passengers Table

5.2 Flights

Column	Description
flight_id (Primary Key)	Unique identifier for each flight
flight_number	Flight Number
departure_airport	Departure Airport Code
arrival_airport	Arrival Airport Code
departure_date_time	Timestamp of departure
arrival_date_time	Timestamp of arrival
created_at	Timestamp of when the record was created
updated_at	Timestamp of when the record was update

Table 2 Flights Table

5.3 Luggage

Column	Description
luggage_id (Primary Key)	Unique identifier for each piece of luggage
passenger_id (Foreign Key)	References the passenger_id in the Passengers table
flight_id (Foreign Key)	References the flight_id in the Flights table
description	Description of the luggage
weight	Weight of the luggage
size	Size of the luggage
is_fragile	Flag indicating if the luggage is fragile
created_at	Timestamp of when the record was created
updated_at	Timestamp of when the record was update

Table 3 Luggage Table

5.4 Luggage_Sharing_Preferences

Column	Description
preference_id (Primary Key)	Unique identifier for each piece of luggage
passenger_id (Foreign Key)	References the passenger_id in the Passengers table
flight_id (Foreign Key)	References the flight_id in the Flights table
from_date	Start date of the sharing preference
to_date	End date of the sharing preference
allowed_weight_range	Allowed weight range for shared luggage
allowed_size_range	Allowed size dimensions range for shared luggage
allow_fragments	Flag indicating if the luggage is fragile are allowed
created_at	Timestamp of when the record was created
updated_at	Timestamp of when the record was update

Table 4 Luggage Sharing Preferences

5.5 Shared_Luggage

Column	Description
share_id (Primary Key)	Unique identifier for each piece of luggage
luggage_id (Foreign Key)	References the passenger_id in the Passengers table
shared_with_passenger_id (Foreign Key)	References the flight_id in the Flights table
share_date	Start date of the sharing preference
return_date	End date of the sharing preference
is_accepted	indicating if the sharing request is accepted
created_at	Timestamp of when the record was created
updated_at	Timestamp of when the record was update

Table 5 Shared Luggage

6. Challenges

Any new technology has challenges. This doesn't exclude this ERD design let me guide you through some of the challenges I thought about so far:

6.1 Stealing/Fraud

As a passenger you don't want to lose your luggage, especially if it contains something valuable.

6.2 Illegal/Prohibited stuff

Some passengers might use this service to smuggle illegal stuff like drugs.

6.3 Privacy Concerns

Whether you're carrying a secret document or something you don't want anyone to look at, sharing your luggage with others might raise this risk.

7. Future Enhancements

This will be a revolutionary solution for overweighing luggage not just locally but all over the world. Thus, I chose to work on this database and enhance it in the near future by creating APIs/Endpoints and connect and app with it.

Soon, I will be launching a platform to put this design under real-world testers and real passengers.

8. Conclusion

Overall, this Database Design serves as a real test for developing a modern luggage sharing platform that enhances convenience, promotes collaboration among travelers, and adapts to the evolving needs of the aviation industry and passenger expectations in terms of overweighing luggage and how passengers can use their maximum capacity and make luggage system more optimized. At the end, I hope you enjoyed reading my document.

Github Link

https://github.com/wakka-2/Luggage-Sharing-Database