DAMG6210 Data Management and Database Design Group 18

Topic: Carpooling

Members:

Sutiksh Verma: 002122052

Ashish Shethia: 002776691

Varun Yepuri 002771801

Ratnesh chimnani 002795124

Krishanand Jha 002768931

Mission Statement:

This project demonstrates the use of databases to solve the problem of individuals facing difficulty to find the most efficient and cost effective rides to their destination for e.g. Companies, University or Planned Trips.

Note: While viewing the ERD, view it as a whole system then it should make sense why some of the entities have many to many relationships for example a passenger can take multiple rides and a ride can have many passengers. Logical Model consist of all 3NF relations.

Changes and Reasons for Change:

1. Created a Supertype and Subtype: The user is the supertype and its subtype are Passenger and Driver. Also removed made the relationship between supertype and subtype one-to-one.
2. Removed the attribute Passenger Name from the Ride entity as we are using the foreign key Passenger_ID.
3. The relationship between Ride and Passenger has been changed to Many-to-Many.
4. The driver relationship to Payment is through ride, so if the driver has a ride he gets the payment.
5. A Passenger can take multiple trips and multiple trips can be made to a location

To design a database for this system, we have identified the following entities must be:

1. User (Super-Type)

Attributes: User ID(PK), Name, Phone Number, User Type

2. Driver (Sub-Type)

Attributes: Driver ID(PK), Driving History, Driving License

3. Passenger (Sub-Type)

Attributes: Passenger ID(PK), Destination Preferred, Trip History, Rating

4. Schedule

Attributes: Schedule ID(PK), Driver ID(FK), OrLocation ID(FK), DeLocation ID(FK), Dep Date, Dep Time, Estimated Time of Arrival, No of Passengers, Fare

5. Car

Attributes: Car ID(PK), Driver ID(FK), Make, Model, Year, Plate Number, Capacity

6. Payment

Attributes: Payment ID(PK), Ride ID(FK), Passenger ID(FK), Charge Type, Payment Type, Payment Amount

7. Ride

Attributes: Ride ID(PK), Driver ID(FK) Passenger ID(FK), Pickup Location, Dropoff Location

8. Rating

Attributes: Rating ID(PK), Comment, Date

9. Trip

Attributes: Trip ID(PK), Location ID(FK), Passenger ID(FK), Route

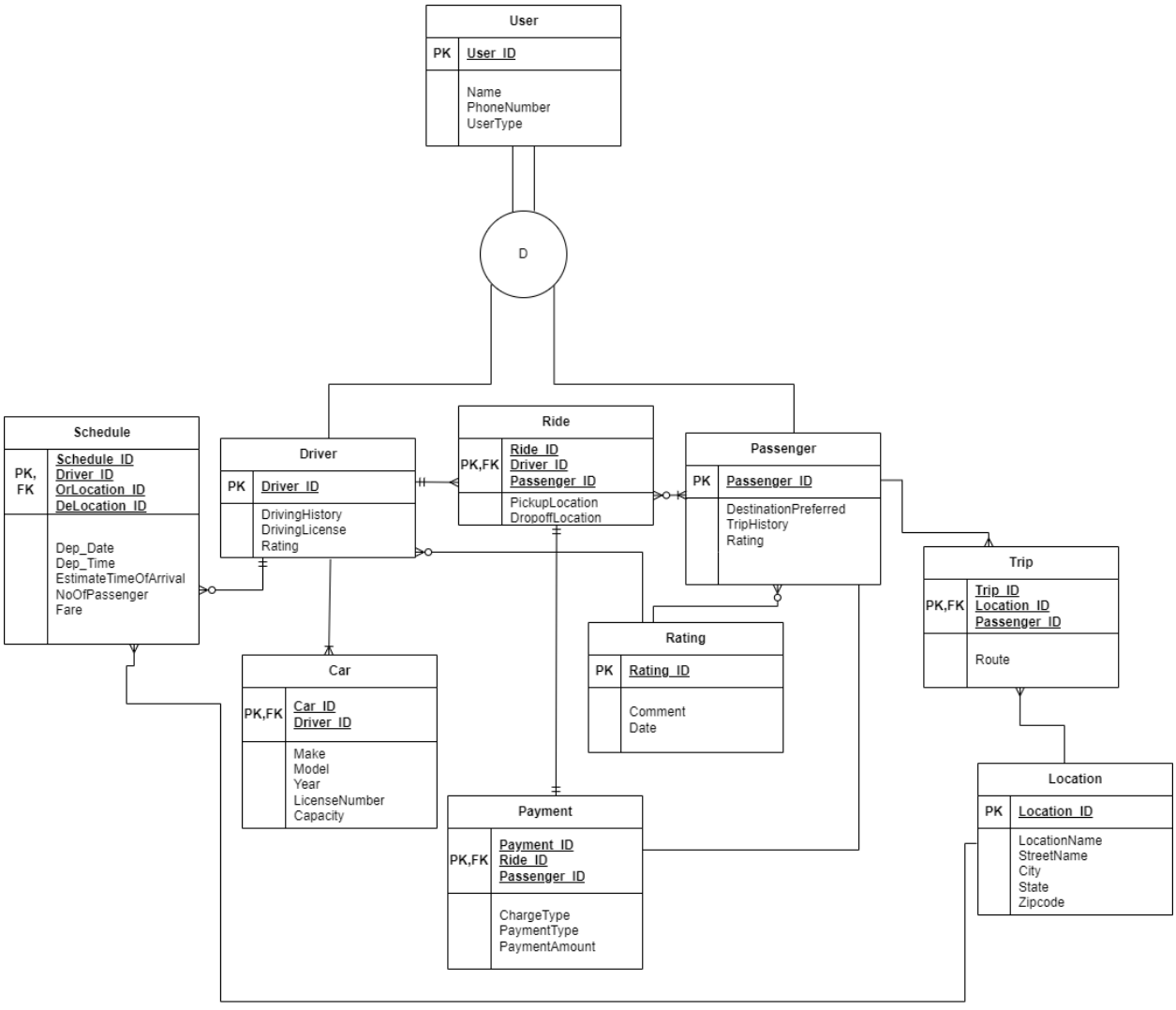
10. Location

Attributes: Location ID(PK), Location Name, Street Name, City, State, Zip Code

Final ERD:

For better visibility, use this link if needed:

[Final ER Diagram.drawio]



Logical Model based on ERD:

For better visibility, use this link if needed:

[logical model.drawio]