

PROJECT MILESTONE 1

IE6700

Data Management for Analytics

Done by:

Valli Meenaa Vellaiyan (NUID: 002783394)

Hrithik Sarda (NUID: 002766048)

Professor:

Dr. Venkat Krishnamurthy

Teaching Assistants:

Saharsh Desai

Zixi Xiao

PROBLEM STATEMENT:

Creating a database for a transport company called “Boston Convenience Transport” to store the details of services offered, requests made, trips taken and vehicles owned, and customer and employee information. The system follows a business to business (B2B) communication, that is, companies that require transportation of their goods will serve as customers for our transport company.

The customer company is uniquely identified by its name, address, and phone number. The goods owned by the company are handled by their goods manager, who will act as our point of contact throughout the transportation. We store each customer company manager’s name, his/her unique ID, and his/her phone number. The goods are characterized by their weight and dimension; they are identified by an invoice, which indicates the customer’s ownership of the goods. The customer makes a request for a service by giving information about the “pickup location” and “drop location”, as well as a “deadline for the delivery”. The “date” on which the request is made also gets logged. Each request is identified by an “ID”.

While making a request, the customer can opt for two kinds of services: parcel based service or full load service, where each service has a unique “ID”. In parcel based service, the price is assigned based on the weight and dimensions of the parcel to be delivered, whereas in full load service, the price is assigned for each vehicle required by the customer to make the delivery. Bills are generated for all the services, and each bill is characterized by a unique “ID”, “total freight”, and “customers information”.

Services have one or many trips that are to be taken, but every trip is linked to a single service and is uniquely identified by an ID. “Total Trip distance”, “Estimated Trip duration” and “Trip cost” are additional characteristics of the trip that are stored in the database. Every trip is managed by a trip manager who decides the route and assigns vehicles required to complete the trip. A trip manager can manage many trips at a time. One or more vehicles are assigned to a trip. They are identified by their unique “vehicle number”. Each vehicle’s “capacity”, “make and mode”, “type” and “odometer reading” are stored to measure total distance driven per trip and the customer is allowed to choose the type of vehicle required from our inventory. These vehicles are driven by company employed drivers.

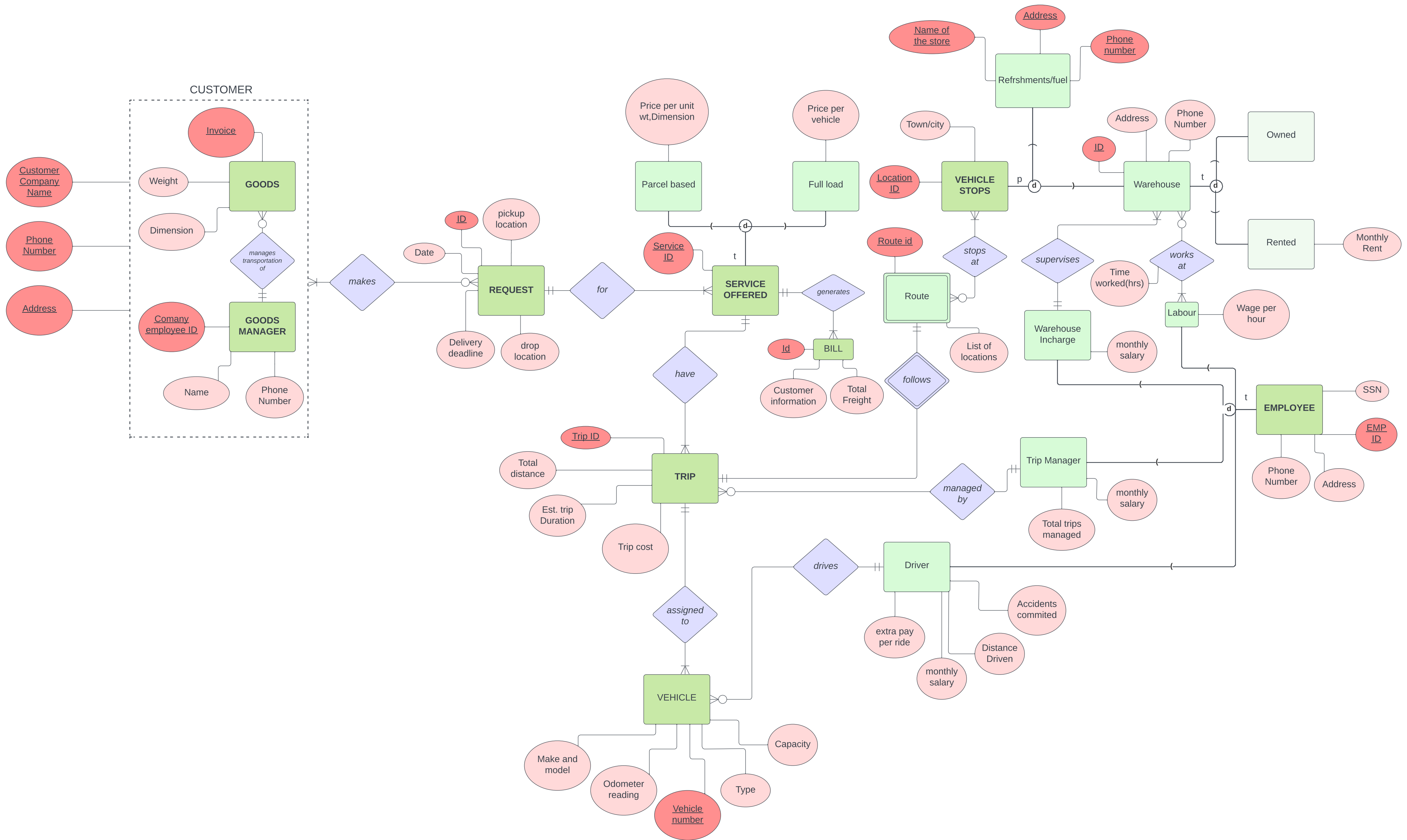
A pre-decided route is followed by every trip. Each route has a “route ID” and a “list of locations” that the vehicle needs to stop at. Each vehicle stops at one or more “towns/cities” on the route and the vehicle stop is identified by a “location ID”. At a particular location the vehicle generally stops at an already decided fuel/refreshment store or at the company's warehouse. Fuel/refreshment store is identified by its “address”, “name” and “phone number”; this information is stored to confirm the vehicle’s arrival and departure, which helps in tracking the vehicle. The company has warehouses at every location ID, which is either rented or owned.

“Monthly rent” is associated with the warehouses that are rented and is stored in the database. “Address” and “phone number” of every warehouse is stored along with its unique “ID”. Each warehouse is supervised by a warehouse incharge and has laborers working in it.

Elaborating on the various employees working at our company, each one is assigned an employee ID. In addition to this, their SSN, address, and phone number are also stored in the database. All the employees working in the company are divided into 4 separate categories -

- 1) A Trip manager plans and overlooks all the proceedings related to a particular trip. His monthly salary and the number of trips he manages are stored in the database.
- 2) A Warehouse incharge manages the inflow and outflow of goods at a specific warehouse. His monthly salary is stored.
- 3) Each warehouse has a set of labors that are called upon for loading and unloading purposes. They are paid based on the number of hours they work at the warehouse.
- 4) Drivers are paid a fixed monthly salary. Their “total distance driven” and “number of accidents committed” are stored in the database to measure their performance relative to other drivers. All drivers are paid additionally per ride; this “extra pay” is fixed per ride and is calculated based on the trip duration. If the trip extends for multiple days (i.e., for more than 24 hours), the extra pay is recalculated by adding his daily food/refreshment and living expenses.

We have designed an EER diagram below to capture all the information required to create the database for Boston Convenience Transport.



CONCEPTUAL DATA MODEL OF BOSTON CONVENIENCE TRANSPORT