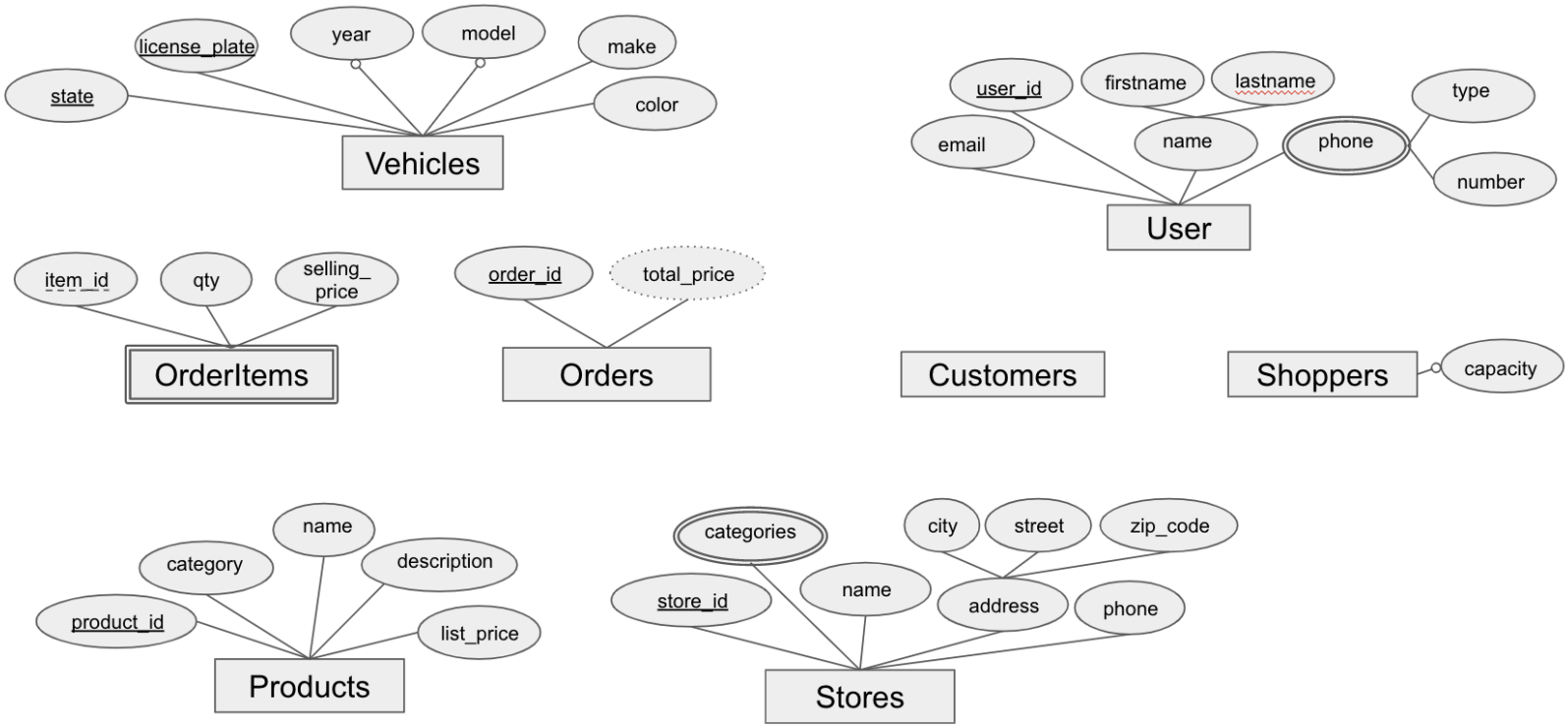
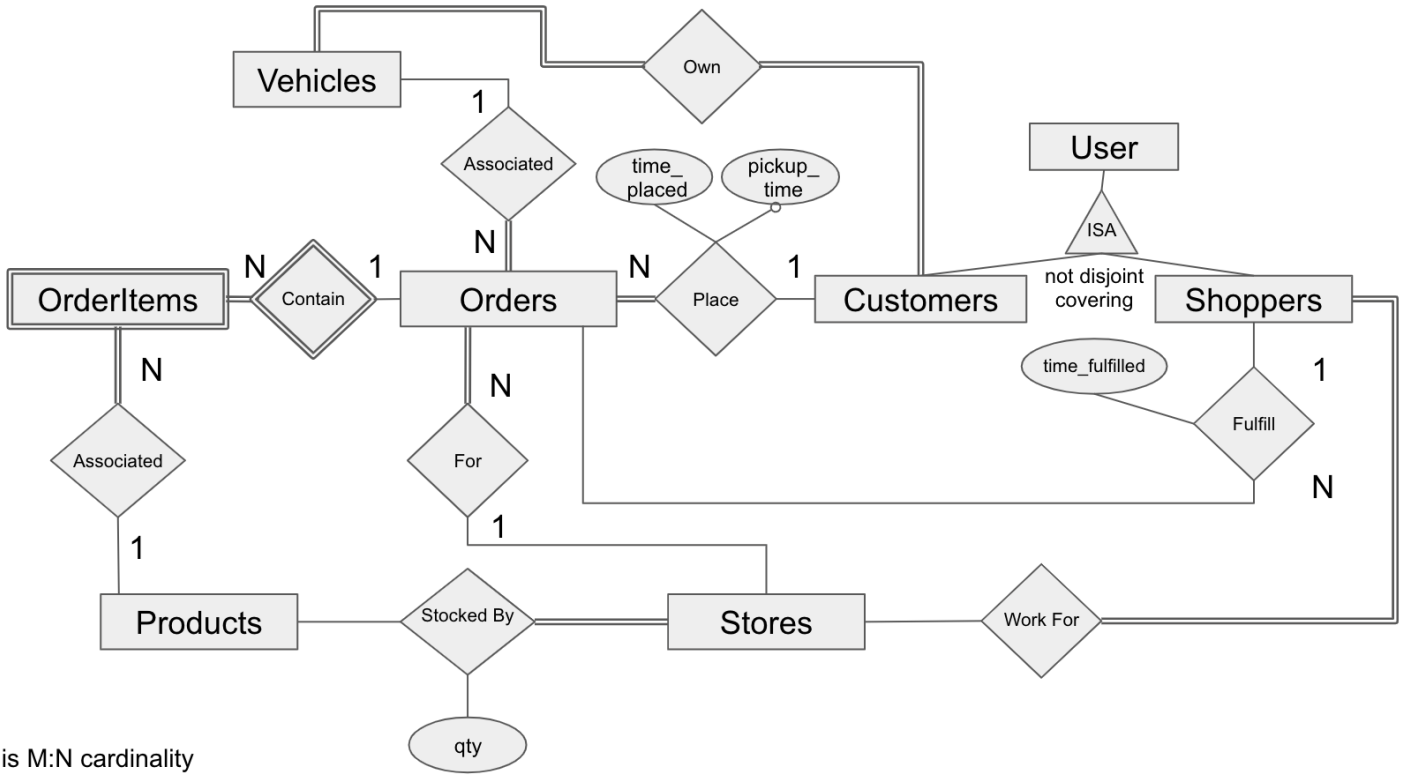
ShopALot ER Diagram

The following ER diagrams were derived from the ShopALot planning interview detailed below in the ShopALot English Description.

With attributes:



With relationships:



Default is M:N cardinality

ShopALot English Description

Many stores have started to cobble together approaches to safe and socially distant shopping; your goal is to help them out, especially the smaller local stores, by providing a database-backed service that supports “parking lot shopping.” To reduce the traffic inside busy stores such as grocery stores, users who know exactly what they want and verify that it's available will be able to submit their orders for goods in advance and then wait in the parking lot. From there, designated "shoppers" -- **ShopALot.com** employees -- will be assigned their orders and will shop for them in batches and then perform the handoff to ShopALot customers from the comfort of the customers’ cars in store parking lots. Your CEO’s initial vision for this service was inspired in part by Amazon stores, so the first working name for the startup was another major river: **Nile.com** was the plan until one of your fellow co-founders pointed out that now might not be the best time to name a new startup after another virus...

In an interview with the ShopALot founders, they shared the following thoughts on the data model needed for their service:

1. Each user will be assigned a unique user id by ShopALot when they first join the service. Users will have an email address, a name consisting of a first name and last name, and a set of phone number(s); each phone number will consist of its type (e.g., home, mobile, or other) along with the number itself.
2. A ShopALot user can be a customer or a shopper. (Shoppers can also be customers since they may want to use the service too sometimes!) To help shoppers to control the amount of shopping they may be asked to do at once, shoppers can optionally specify their "order capacity" (e.g., at most 6 orders at a time).
3. Associated with each customer is one or more vehicles that they might drive. In order for a shopper to identify a vehicle in the parking lot (and consequently, the customer), a vehicle is uniquely identified by the combination of its license plate number and state. Shoppers can also spot a customer's cars based on the remaining attributes of their vehicle: its year, make, model, and color. (Make and color are mandatory; year and model are optional.)
4. Each product that some store might sell and/or that a customer might want is identified by a unique product id. Each product also has a name, a description, one category (e.g. baby-care, beverages, deli, frozen-foods, meal-kits, etc...), and a list price.
5. The central functionality of ShopALot lies in its management of orders. Each order is identified by a unique order id. Each order, of course, will eventually contain one or more order-items. An order-item consists of a unique (within the scope of its order) item number, a quantity, and order-item price itself. Each order-item cannot exist without an associated order. The total price of an order can be computed based on its contents (i.e., its associated order-items, quantities, and prices). A given order-item represents the inclusion of a particular product (such as a much-coveted 6-pack of Charmin two-ply toilet paper) in the order.
6. Stores are another central component of ShopALot. Each store will have a unique store id, a name, a single phone number, zero or more product categories, and an address. An address includes the store's street, city, and zip code.
7. Since this is about parking-lot shopping, a customer must own at least one vehicle; however, a vehicle may be owned by multiple customers. (E.g., a married couple might both be ShopALot customers and might drive any one of their cars on a trip to pick up an order.)
8. A shopper must work for one or more stores, and a given store can have any number of shoppers.
9. Customers may place orders, and each customer order will be time-stamped with its initial order time and optionally with a target pickup time. Shoppers will be assigned to fulfill orders, and the actual time of fulfillment (i.e., the time when the shopper delivered the order to the customer in the lot) will also be recorded so that ShopALot knows when the final delivery occurred.
10. The ShopALot service's central entity, the order, can only be placed for a single store. (If a customer wanted to order items from several stores that share a parking lot, those would be handled as separate orders.) A single vehicle must be associated with a given order as well to specify the vehicle to which the shopper should deliver a given order after fulfilling it.
11. Products are stocked by (sold by) stores, and ShopALot needs the stock information to include an associated quantity that indicates how much of each product is currently in-stock at a given store.
12. As alluded to earlier, each order-item in an order is associated with a particular product that is stocked by the store that the order is being placed for.