

## In-class Exercise: ER Modeling

Recall the two scenarios below from the previous in-class exercise. In groups of three, create two ER models, one for each of the scenarios described above. Your diagram should reflect all entities, attributes, and relationships mentioned in the descriptions.

*(Don't start from scratch! Use the list of entities and attributes in the previous exercise as a starting point.)*

### **Scenario 1: Inventory and Parts**

The purchasing department of the Monster Car Company wants to track part orders for its specialty vehicles. The company builds several awesome vehicles, such as a truck (which they call "Truckasaurus"), limousine ("Limosaurus"), a van ("Vanasaurus"), or an RV (for some reason, "Buddy").

When a new vehicle is ordered by the customer, the division that makes that vehicle will order parts from purchasing. The purchasing department **doesn't care what vehicle the part is for**, it just wants to track what parts were ordered.

Each order can contain multiple parts, and a part can be part of more than one order. An order is described by an order id number, the order date, the first and last name, email address, department name, and phone number of the contact person in the originating department.

A part is described by its name, the Monster Car Companies internal part number, and a description of the part. Also, the inventory level for each part is tracked so that the department knows when they need to restock in order to maintain timely order fulfillment.

A part supplier is described by its supplier id, name, contact phone number, and contact email address. A part may be sourced from several suppliers, and a supplier can sell multiple parts to the Monster Car Company.

Finally, suppliers have their own part numbering schemes. This means that the manufacturer parts numbers for the same part may be different for different suppliers. The database should keep track of suppliers' part numbers and relate them back to the car company's own internal part number. For example, the Monster Car Company may refer to a "hex widget" as "101," but supplier 1 may use the part number "201" and supplier 2 may use the part number "804."

## ***Scenario 2: Housing Authority***

The Big City public housing agency has assigned you the task of keeping track of who is living in the agency's developments over time. The agency needs a database that allows them to capture this information.

The city has several public housing developments across Big City. A development is described by its development id, its name, and the number of units. Each unit in the development is described by the unit number, the number of bedrooms, the number of bathrooms, and the square footage.

*(I didn't explicitly give you the cardinality here, but think about what it would be. What is the relationship between a housing unit and the development?)*

You also need to keep track of the people living in each unit. The basic unit of residence is the household, described by a household id and a description field (for notes from the agency). There is a limit of only one household per unit at a time although multiple households will occupy a unit over time. Each household can be made up of one or more residents, and a resident can only be part of one household.

A resident is described by a resident id, their first and last name, their date of birth, and whether they are the head of the household.

Finally, keep track of when a household moved into and out of a unit. You want to be able to track households as they move from one unit to another or from one development to another. Therefore, you can describe the occupancy of a household in a housing unit by a start date and an end date. If they are currently living in the unit, the end date would be left blank.