Design Capture

1. Choose one of these plain English descriptions and create an ER diagram from it
2. Be sure to choose a problem that you understand, not one that you think will be simple to create…
3. Your only goal is to identify all entities, attributes and relations
    a. This is simply a first pass at understanding the process. You are not attempting to identify any keys or cardinality, nor are you attempting to remove any many-to-many relations that may or may not exist.
4. If necessary, state any assumptions that you made about the description or data that you are working with.

Music Website

A website for music sharing needs a database to keep track of bands, band members, songs, user preferences, and more. A band must have one (and possibly more) band members, and a band member may actually belong to more than one band. A song has a title and a set of features (a feature is a descriptive text field). The same features are used as user preferences so that songs and users can be matched up. A user has a unique ID, an email address, a first and last name, and a password. A value for strength of preference is associated with each user feature. A song may or may not be associated with an album, but it always has a band associated with it. An album has a title, a band, and set of songs. Bands have many influences and many other bands that they sound like.

Shady Acres

The Shady Acres retirement community has a motor pool that offers three different kinds of vehicles that can be checked out by residents and employees. They have vans, sedans, and golf carts. An employee may also be a resident.

Employees have unique employee numbers and residents have unique resident numbers. Employees have a name and an hourly wage. Residents have a name, a building, and an apartment number. Either must have a driver's license and credit card on file with the motor pool office. Paper copies are kept in a locked drawer. The expiration date of the license and credit card (not the actual license number or credit card number) are stored in the database.

An employee/resident may only have one vehicle checked out a time. The pick-up time and expected return time and (and date) are tracked for each active check out. Completed check outs are archived when the vehicle is returned.

Traffic violations and complaints about drivers of motor pool vehicles are logged for archived checkouts.

Automobile Company

Design a database for an automobile company to provide to its dealers to assist them in maintaining customer records and dealer inventory and to assist sales staff in ordering cars.

Each vehicle is identified by a vehicle identification number (VIN).

Each individual vehicle is a particular model of a particular brand offered by the same company (e.g., the XF is a model of the car brand Jaguar of Tata Motors).

Each model can be offered with a variety of options, but an individual car may have only some (or none) of the available options.

The database needs to store information about models, brands, and options, as well as information about individual dealers, customers, and cars.

(Silberschatz, A., Korth, H.F., and S. Sudarshan, *Database Systems Concepts*, 6th ed., McGraw-Hill, 2011, ex. 7.21, p. 319.)

Big Hit Video

BigHit Video Inc. wants to create an information system for online sales of movies. People will be allowed to register as customers of the online site and to update their stored information.
Information must be maintained about customers' shipping addresses, email addresses, and credit cards.

In a single sale, customers will be allowed to purchase any quantity of movies. The items in a single sale must be shipped to a single address and must have a single credit card to charge. A customer will be provided with a virtual shopping cart to store items to be purchased.

As each item is selected, it is added to the shopping cart. When the customer finishes shopping, he or she will be directed to a checkout area where all of the items in the shopping cart can be purchased. At this time, payment and shipping information is entered. Once the sale is complete, the shopping cart will be deleted and the customer will be sent a receipt by email.

(G. Riccardi, *Database Management with Web Site Development Applications*, Addison-Wesley, 2003, pp. 53-54.)

Parts-R-US

The Parts-R-Us supply company keeps a description of each part type it sells along with the unique part type number, suggested retail cost, and amount of the part type in inventory.
Each part type can be part of an assembly type. An assembly type is identified by its Anumber. Part types may have different quantities for different assembly types, but only one quantity per part type per assembly type. Each assembly type has a suggested cost. An actual assembly is created using specific part instances when a customer orders the assembly. Each order and customer has a unique identifier. An order has a date, quantity, and actual retail charge for each part instance or assembly instance ordered.