

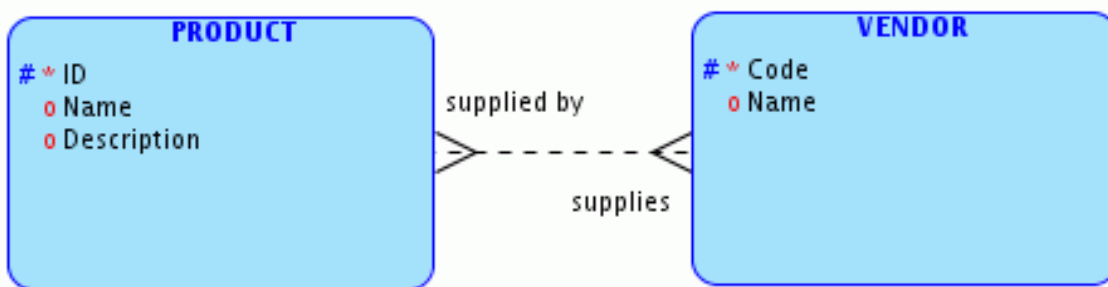
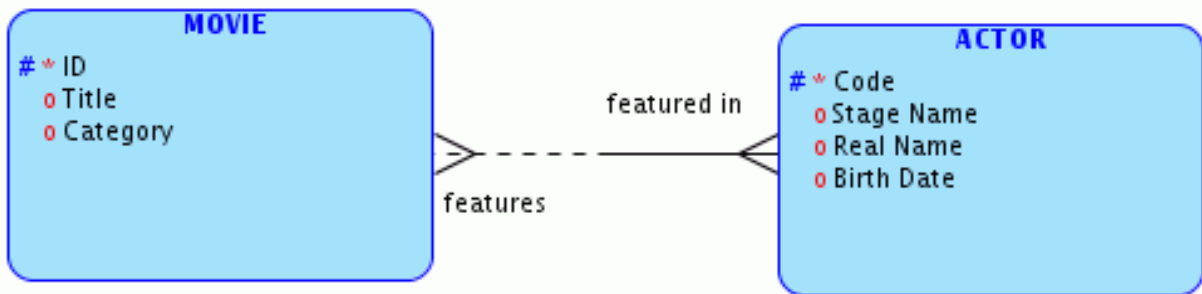
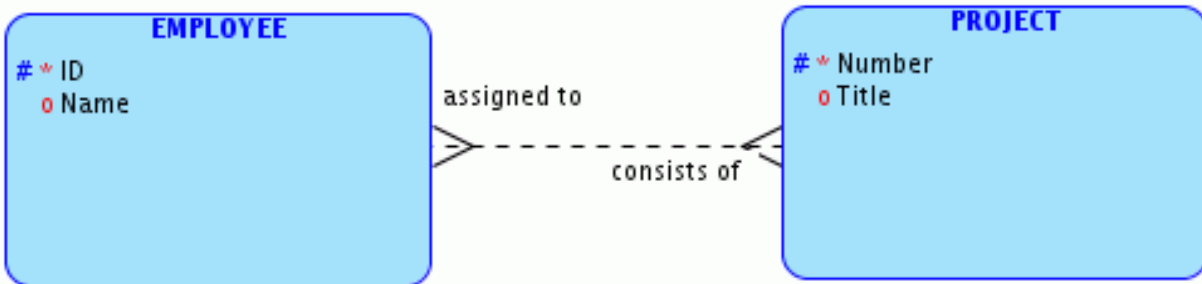
Practices for Lesson 12: Validating Relationships

Chapter 12

Practice 12-1: Resolve M:M Relationships

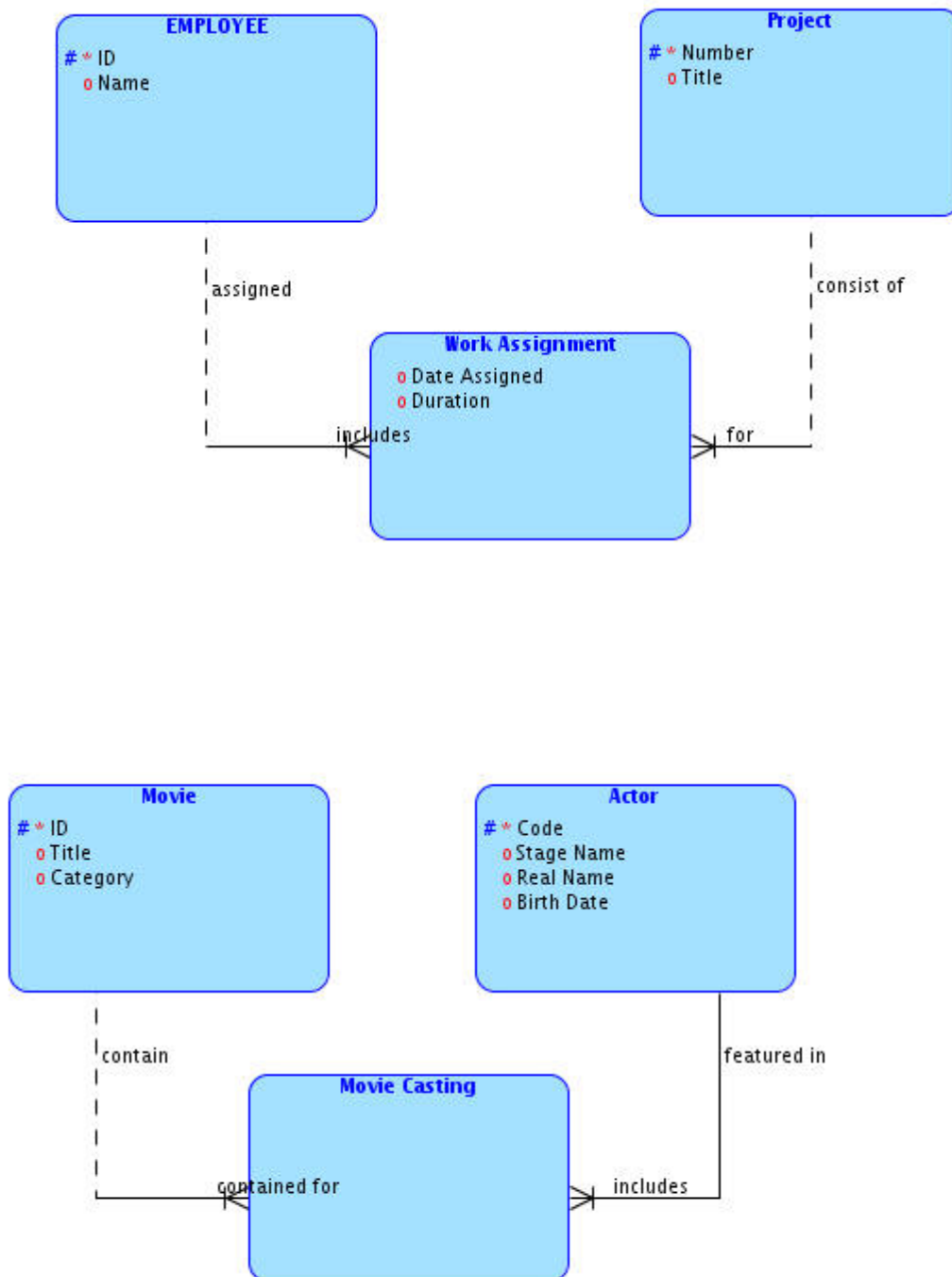
Task

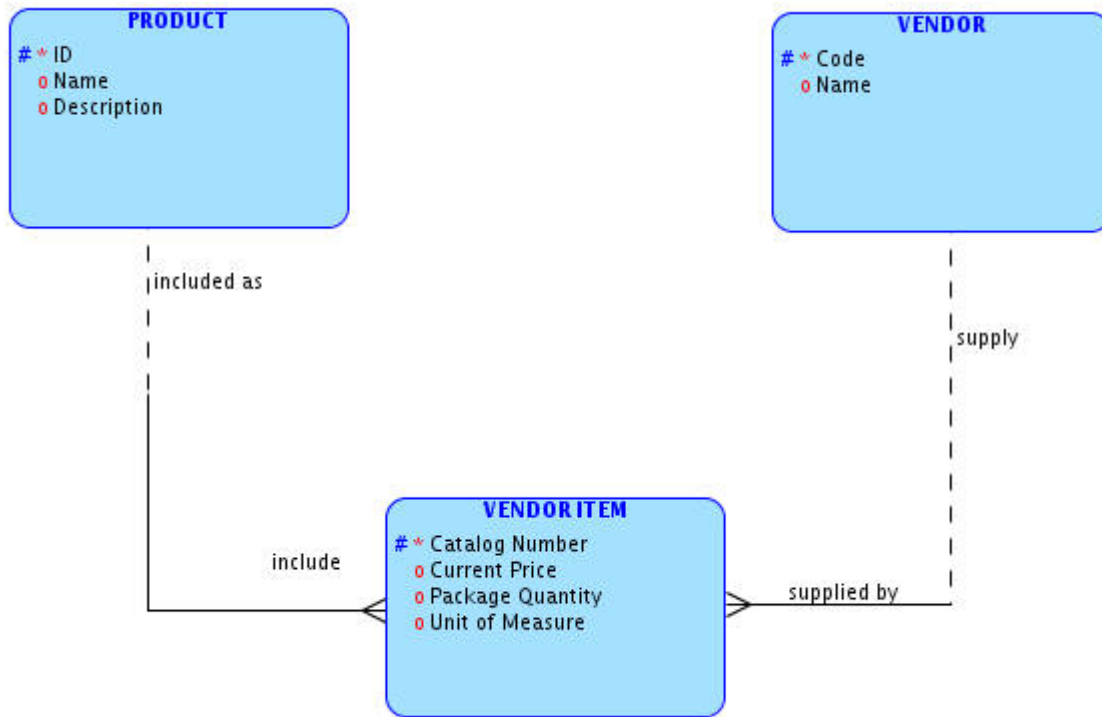
In this practice, you resolve the following M:M relationships. Add additional attributes in the intersection entity. Perform the work in Oracle SQL Developer Data Modeler. Start in a new logical model.



Solution 12-1: Resolve M:M Relationships

One possible solution to this practice is:





To create the resolved entity, delete the existing relationship, create the new entity and attributes, delete the attributes that you moved to the new entity, and then establish the new relationships with the new entity.

Note that the last example does not have identifying relationships with the originating entity because Catalog Number uniquely identifies a Vendor Item.

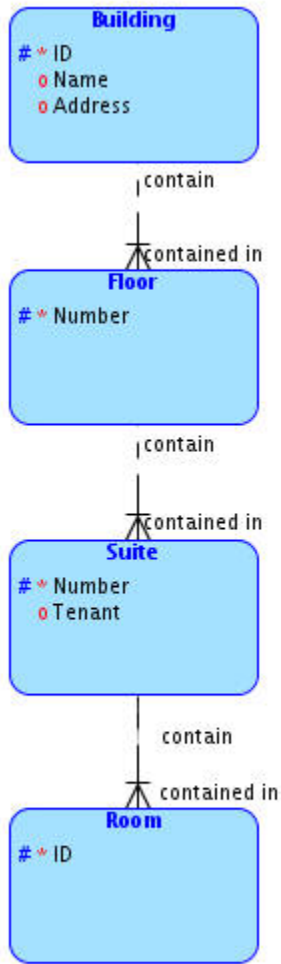
Practice 12-2: Model Hierarchical Data

Tasks

In this practice, model the entities, relationships, attributes, and unique identifiers for the hierarchy of a hotel. The hotel has many floors, many suites on each floor, and many rooms within each suite.

Solution 12-2: Model Hierarchical Data

One possible solution for this practice is:



Practice 12-3: Model Hierarchical Data and Recursive Relationships

Tasks

Develop two ERDs to represent the following situation. Develop one as a hierarchical structure and one as a recursive structure. Put your model into Oracle SQL Developer Data Modeling.

Curves Dynamics sells products throughout the United States. They are divided into four major sales regions: the Northern, Eastern, Southern, and Western regions. Each sales region has a unique region code. Each sales region is then divided into sales districts. For example, the Western Region is divided into the Rocky Mountain, Northwest, Pacific Coast, and Pacific districts. Each district has a unique district code.

Each district is made up of sales territories. The Rocky Mountain district is composed of three territories: Wyoming-Montana, Colorado, and Utah-New Mexico. The Northwest district is made up of two territories: the Washington and Oregon-Idaho territories. The Pacific Coast district is composed of two territories: the California and Nevada territories. The Pacific district includes the Hawaii territory and the Alaska territory. Each territory has a unique territory code.

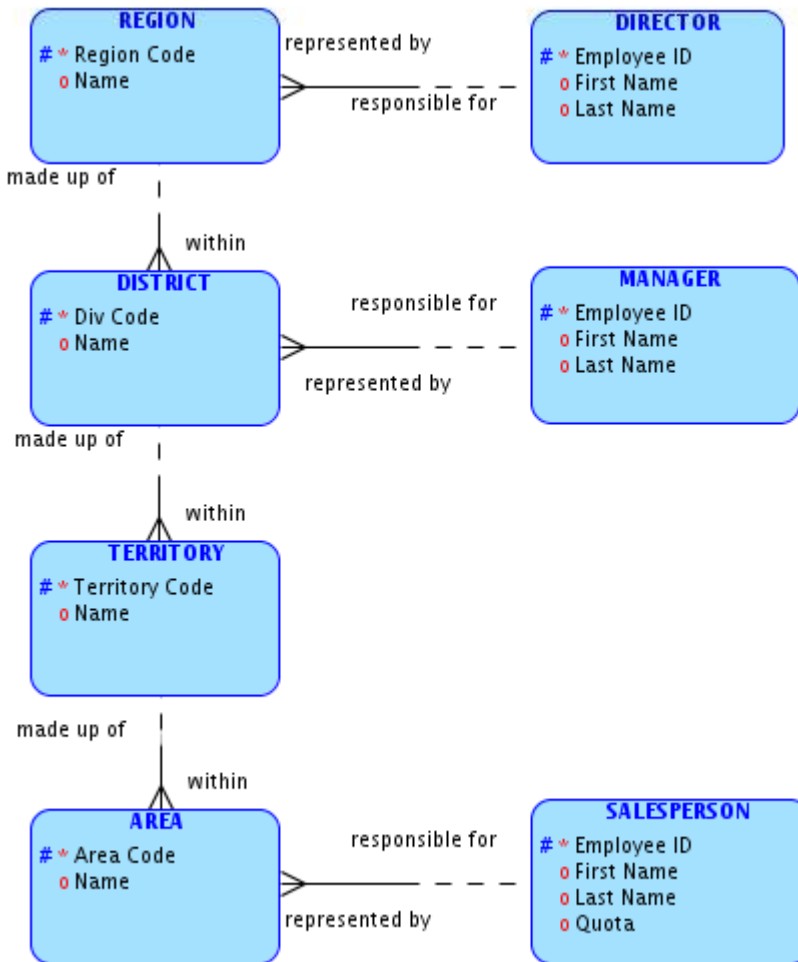
Each sales territory is broken down into sales areas. For example, Colorado is made up of two sales areas: the Front Range and the Western Slope sales areas. Each sales area has a unique sales-area code.

Each salesperson is responsible for one or more sales areas, and has a specific sales quota. Each sales manager is responsible for one or more sales districts and sales directors who are responsible for one or more sales regions. Each sales manager is responsible for the territories within his districts. Employees' responsibilities do not overlap. A sales area is always the responsibility of a single salesperson, and managers and directors' responsibilities do not overlap. Sometimes salespersons, managers, and directors will be on leave or special assignments and will not have sales area responsibilities. All sales personnel are identified by their employee IDs.

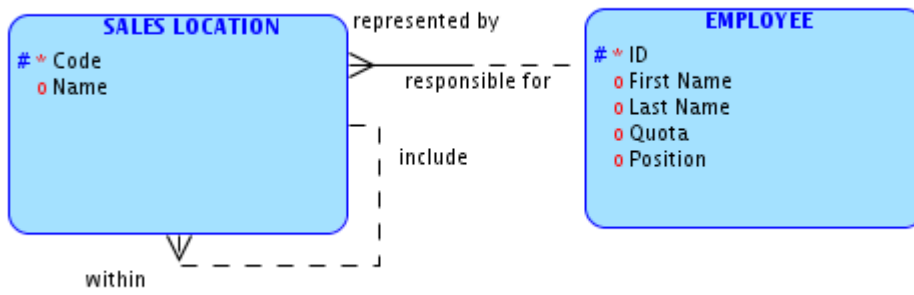
Solution 12-3: Model Hierarchical Data and Recursive Relationships

One possible solution to this practice is:

Hierarchical Structure



Recursive Structure



Practice 12-4: Examine Exclusive Relationships

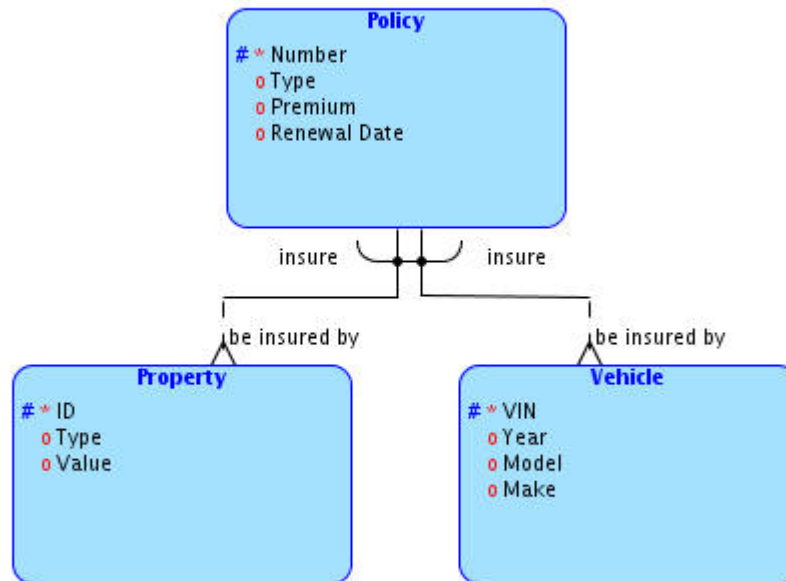
Tasks

Determine how each of the following exclusive relationships should be modeled and then create them in Oracle SQL Developer Data Modeler.


1. ABC Insurance Company would like to keep track of information on its insurance policies. A policy must be either for a property or for a vehicle. Each policy has a policy number, premium, and renewal date. If it is a property policy, the property ID, type, and value must be stored. If it is a vehicle policy, the vehicle identification number (VIN), year, model, and make must be stored.
2. The XYZ Corporation would like to keep track of information about their Commercial versus Private customers. Both types of customer have some attributes in common, such as ID, name, and address. However, XYZ Corporation wants to store some attributes for Commercial customers, such as State Tax ID and Account Number that they do want to store for Private customers. And for Private customers, they want to store the customers' Social Security numbers (SSNs) and credit card numbers, which they do not need for Commercial customers. A customer can only be a Commercial customer or a Private customer, not both.

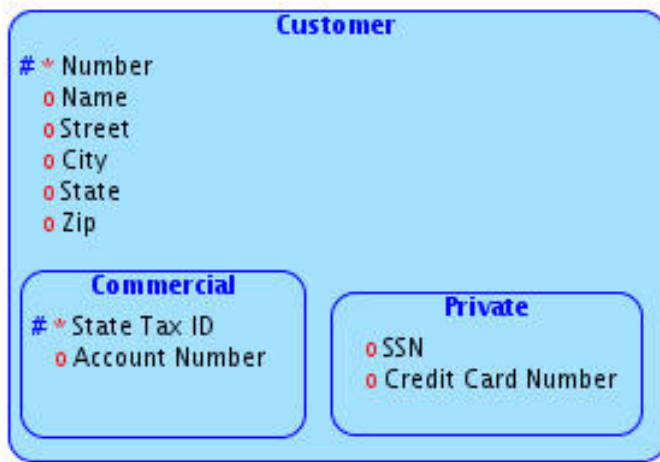
Solution 12-4: Examine Exclusive Relationships

One possible solution to this practice is:



To create the exclusive relationship as shown above, perform the following steps:

1. Create the entities, attributes, unique identifiers, and relationships as you have done previously.
2. Ctrl-select both relationships and the `POLICY` entity.
3. After you select all three, the New Arc exclusive relationship  icon will become available. Click it.
4. An arc is created for both relationships with the `POLICY` entity.



To create the entity type hierarchy shown above, perform the following steps:

1. Create the entities, attributes, and unique identifiers as you have done previously.
2. Double-click the **COMMERCIAL** entity, select **CUSTOMER** for the super type, and then click **OK**.
3. Double-click the **PRIVATE** entity, select **CUSTOMER** for the super type, and then click **OK**.
4. Right-click the background of the diagram, and select Notation. Select Box-in-Box Presentation.
5. You may need to make the super type entity bigger and the subtype entities smaller to see all the objects.

Practice 12-5: Examine Exclusive Relationships

Tasks

Develop an ERD for the following information requirements:

The Right-Way Rental Truck Company rents small moving trucks and trailers for local and one-way usage. There are 347 rental offices across the western United States. The rental inventory includes a total of 5,750 vehicles, including various types of trucks and trailers. The data that needs to be tracked is rental agreements and vehicle assignments. Each rental office rents vehicles that they have in inventory, to customers ready to take possession of the vehicle. Reservations are not taken, and speculation on when the customer will return the rented vehicles is not tracked. The central office oversees the vehicle distribution, and directs transfers of vehicles from one rental office to another.

Each rental office has an office name like “Madison Right-Way” and address. Each office also has a unique three-digit office number. Each office is a home office for some vehicles, and each vehicle is based out of a single home office.

Each vehicle has a vehicle ID, state of registration, and a license plate registration number. There are five different types of vehicles: 36-foot trucks, 24-foot trucks, 10-foot trucks, 8-foot covered trailers, and 6-foot open trailers, each with a type code. For all vehicles, a last maintenance date and expiration date of its registration needs to be tracked. In addition, for trucks, the current odometer reading, the gas tank capacity, and whether or not it has a working radio needs to be stored. For long moves, customers really prefer a radio. The current mileage is logged before the truck is rented, and then again when it returns.

Most rental agreements are for individual customers, but a rental agreement can be for either an individual or a company. A small percentage of trucks are rented to companies. Each company is assigned a company number and the name and address of the company are tracked. The corporate sales group handles all the information separately.

For each individual customer, the following information is tracked: name, home phone, address, and driver's license state, number and expiration date. If a customer damaged a vehicle, abandoned it, or did not fully pay the bill, the customer is tagged as a poor risk, and the customer may not rent again.

Only a single individual or company can obtain a rental agreement, and a separate rental agreement is written for each vehicle. Customers can rent two or more vehicles at the same time. Each rental agreement is identified by the originating rental office number and a rental agreement number. In addition, the rental date, anticipated duration of the rental, the originating rental office, the drop-off rental office, the amount of the deposit paid, the quoted daily rental rate, and the quoted rate per mile are tracked. For trailers, there is no mileage charge.

Solution 12-5: Examine Exclusive Relationships

One possible solution for this practice is:

