Database Design

Relationship Types

Objectives

This lesson covers the following objectives:

- Recognize and give examples of a one-to-one relationship
- Recognize and give examples of a one-to-many relationship
- Recognize and give examples of a many-to-many relationship
- Recognize redundant relationships and remove them from the ERD

Purpose

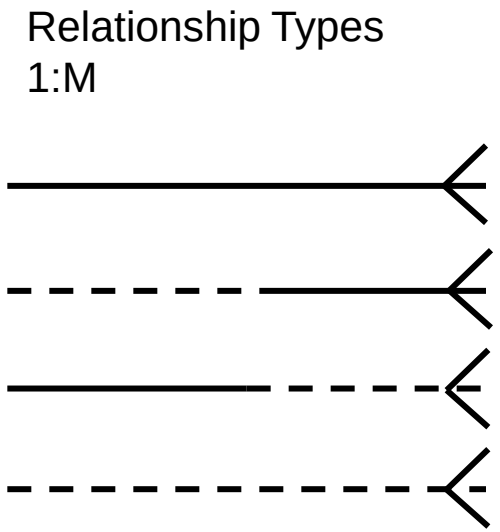
Can one PERSON own many DVDs, or only one ?

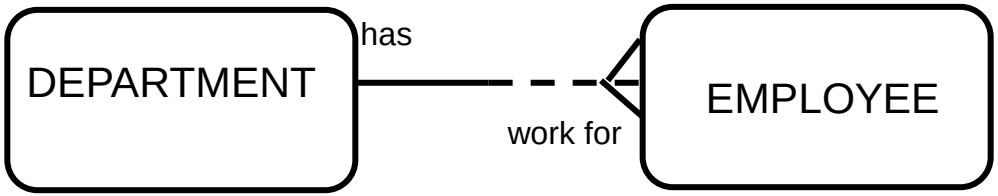
Can one DVD be owned by many PERSONs?

As we refine and improve our model, we want to make sure our entity relationships correctly model our business rules. Remember, you can avoid future costly mistakes by thinking through the details early on.

One-to-Many (1:M) Relationships

The various types of 1:M relationships are most common in an ER Model. You have seen several examples already.

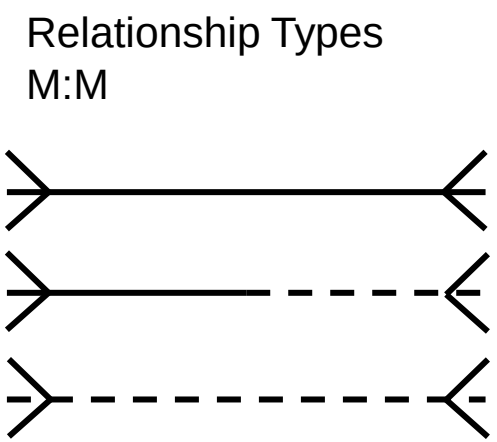


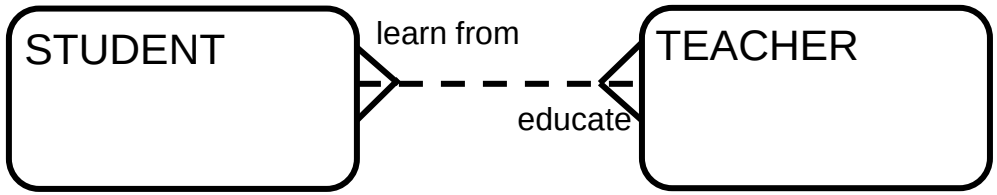


1:M Relationship

Many-to-Many (M:M) Relationships

The various types of M:M relationships are common, particularly in a first version of an ER model. In later stages of the modeling process, most M:M relationships, and possibly all, will disappear.

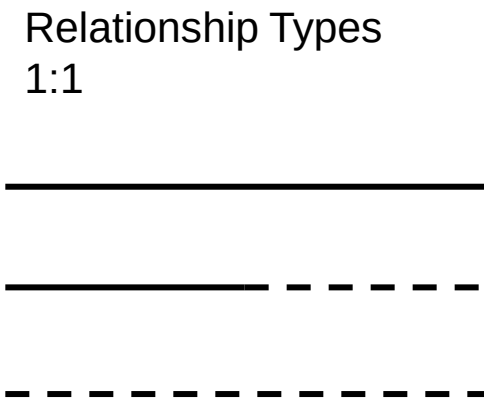




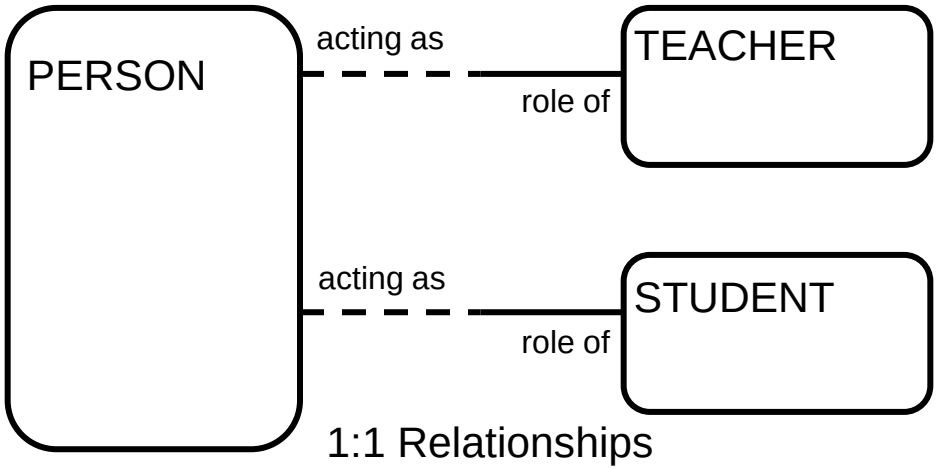
M:M Relationships

One-to-One Relationships For Roles

Usually you will find just a few of the various types of 1:1 relationships in every ER model.

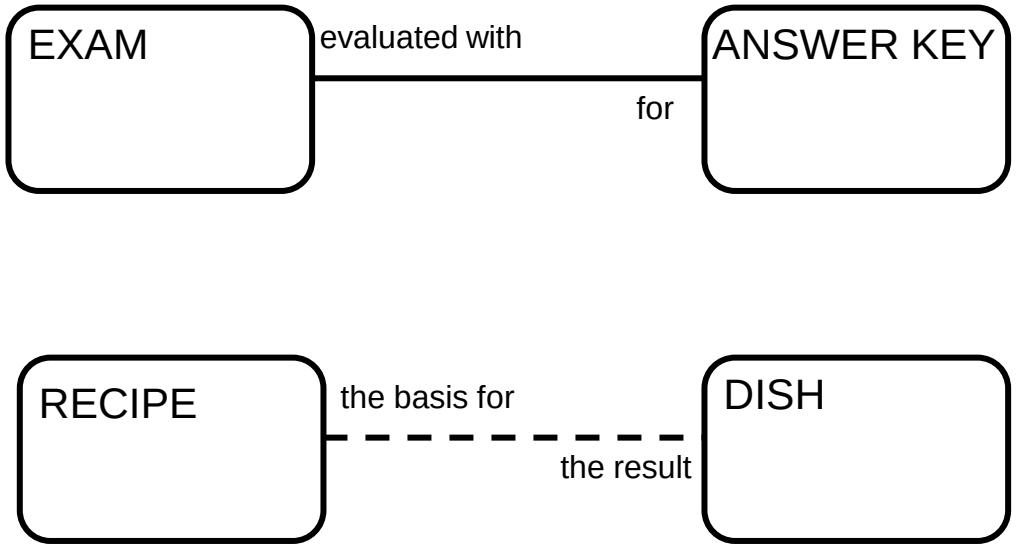


Mandatory at one end of the 1:1 relationship commonly occurs when roles are modeled. See the school model.



One-to-One Relationships For Processes

1:1 relationships (of all three variations) also occur when some of the entities represent various stages in a process.

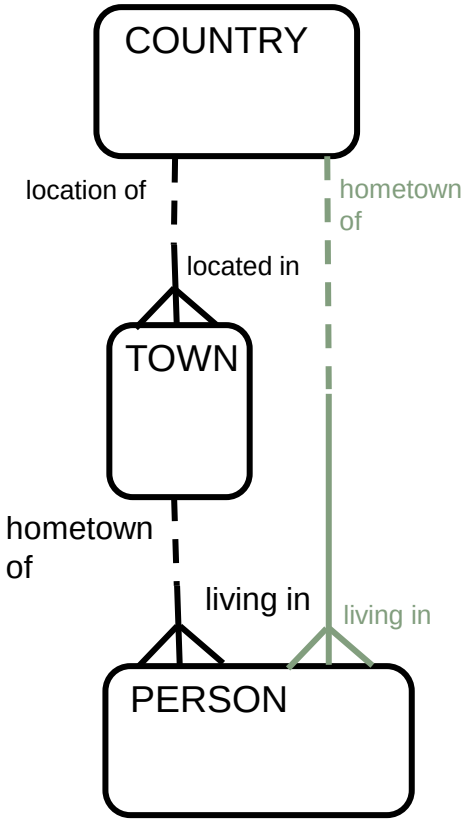


1:1 Process Relationships

Redundant Relationships

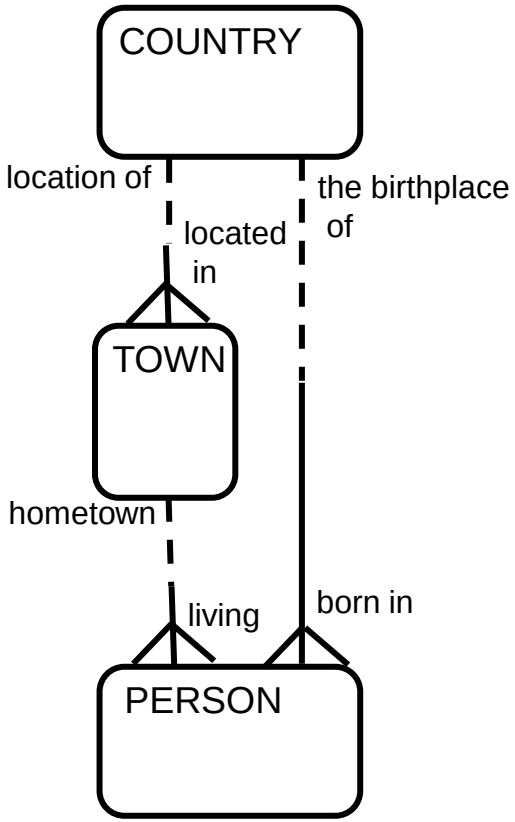
A redundant relationship can be derived from another relationship in the model.

In this example, you can derive the relationship from PERSON to COUNTRY from the other two relationships, and you should remove them from the model.



Redundant Relationships (cont.)

However, be careful of concluding that a relationship is redundant based on the structure alone. Read the relationships to check. The ERD shown here does not reflect a redundant relationship.



Terminology

Key terms used in this lesson included:

- Many-to-many (M:M)
- One-to-many (1:M)
- One-to-one (1:1)
- Redundant

Summary

In this lesson, you should have learned how to:

- Recognize and give examples of a one-to-one relationship
- Recognize and give examples of a one-to-many relationship
- Recognize and give examples of a many-to-many relationship
- Recognize redundant relationships and remove them from the ERD