

Database Design

Generic Modeling



ACADEMY

Objectives

This lesson covers the following objectives:

- Define generic modeling
- Evaluate and describe the advantages and disadvantages of generic modeling
- Construct a generic version of a more specific data model

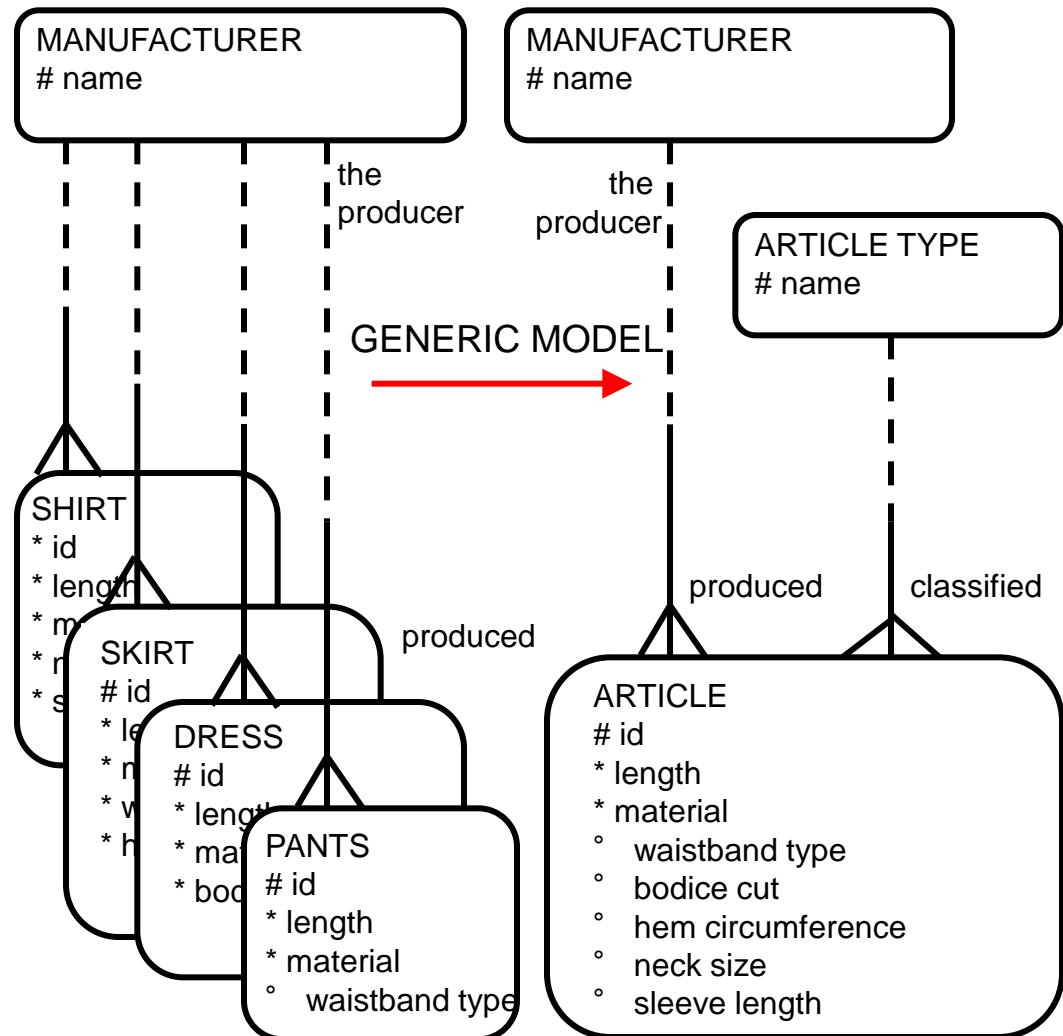
Purpose

Generic models can reduce the number of entities in a diagram and provide a lot of flexibility in unstable situations where the business requirements change often.

A business that needs to frequently add entities and/or attributes could benefit from generic modeling. One example would be a pawnshop that buys and sells different types of items all the time. It would be difficult to predict the number of item types and the different attributes each type would have.

Generic Modeling

Generic modeling looks at the same context from another, more distant perspective. From a distance, many things look the same.



Choosing a Generic Model

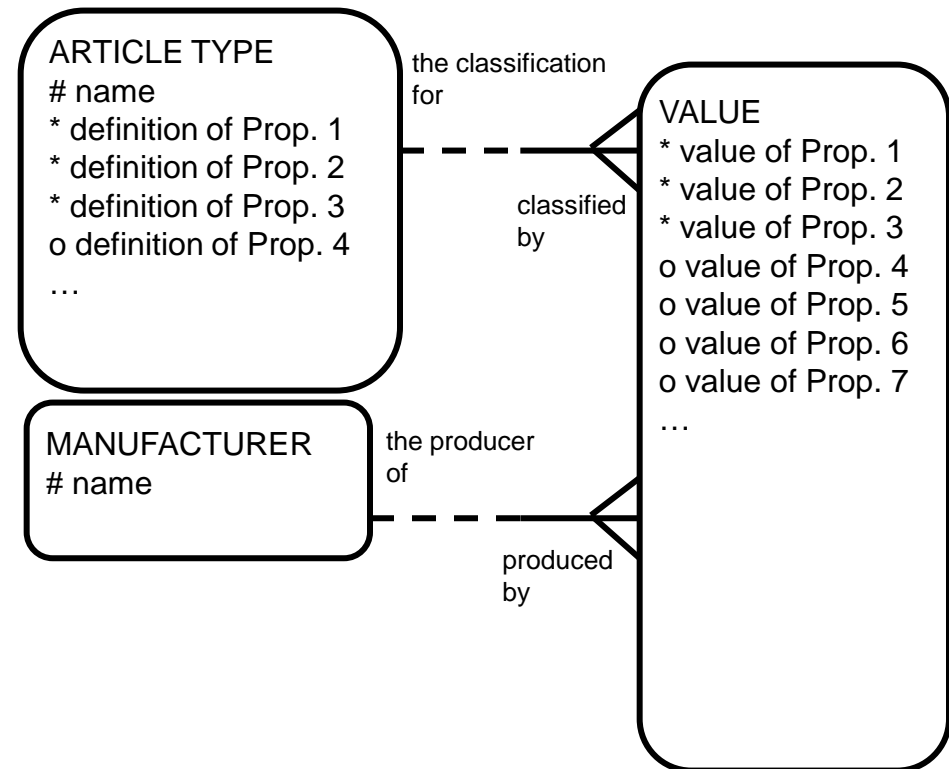
Suppose you are making a datamodel for a clothing store. The business typically sells many different articles of clothing: shoes, shirts, dresses, pants, and so on. Each garment type has different attributes. You can model each type as a separate entity, or you can create a more generic model that uses one entity, ARTICLE, with or without subtypes.

However, this model would be fine only if there were no (or possibly very few) new instances of ARTICLE TYPE during the life cycle of the system.

Recycling of Attributes

Another generic model involves recycling attributes.

Using this structure, here are some examples of instances of ARTICLE TYPE:



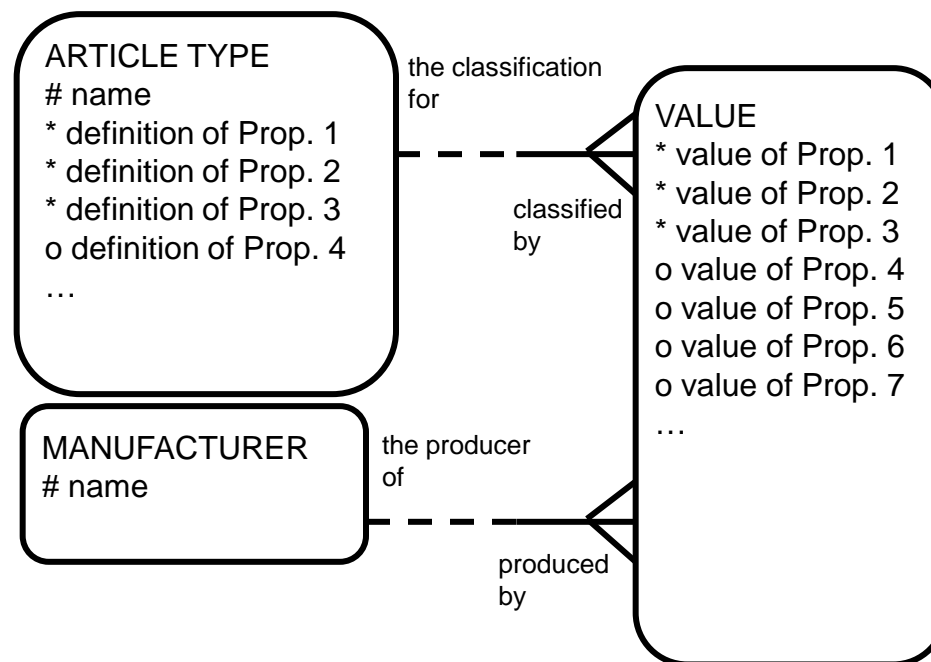
Recycling of Attributes (cont.)

You can also store information about the data types of each property in the definition attributes (example: property 2 for all articles (length) has a data type of number, property 4 of DRESS (bodice style) is stored as text).

Name	Def. of Prop. 1	Def. of Prop 2	Def. of Prop 3	Def of Prop 4	Def of Prop 5
SHIRT	id	Length	Material	Neck Size	Sleeve Length
SKIRT	Id	Length	Material	Waistband Type	Hem Circum.
DRESS	id	Length	Material	Bodice Style	
PANT	id	Length	Material	Waistband Type	

Example

These would be the examples of corresponding instances of ARTICLE.



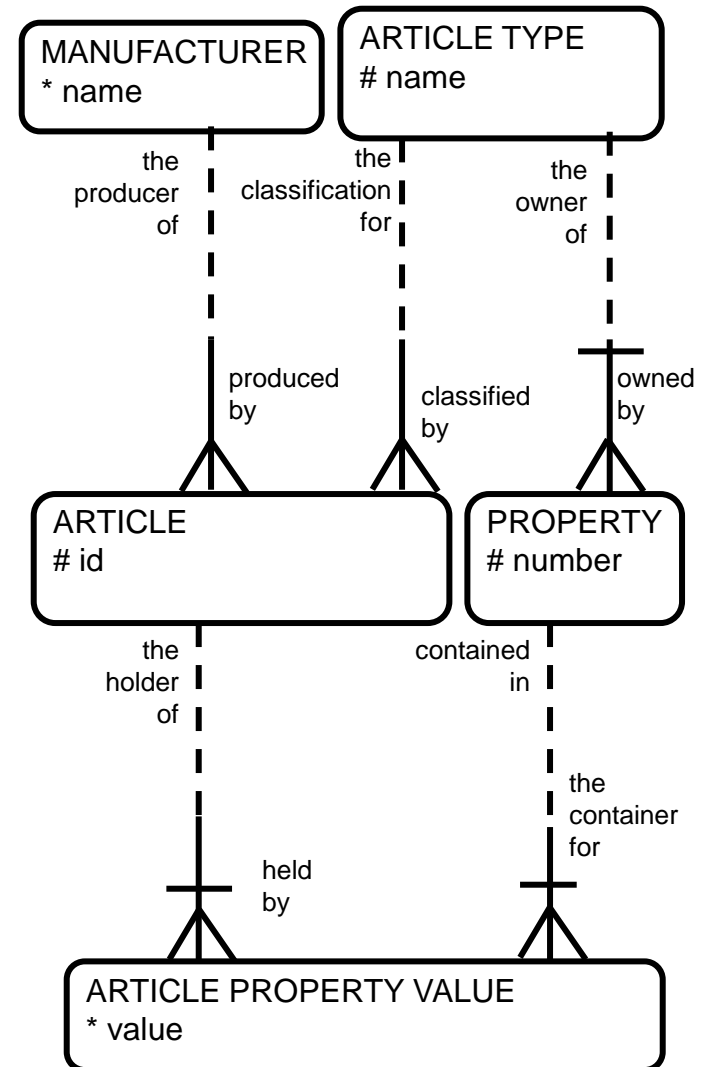
Generic Values

Using this method, you can add new types of articles fairly easily, provided that the number of attributes does not exceed the maximum that was originally defined.

ARTICLE TYPE Name	Def. of Prop. 1	Def. of Prop 2	Def. of Prop 3	Def of Prop 4	Def of Prop 5
SHIRT	DNM105	40	Denim	16	33
SKIRT	LIN200	22	Linen	Elastic	60
DRESS	SHF119	60	Jersey	Empire	
PANT	CHN407	33	Khaki	Flat Front	

Attributes Modeled as Property Instance

This model takes a third approach. Every value for a property of an ARTICLE is stored separately. This model gives a lot of freedom to define new articles and properties during the life cycle of the system. Using this structure, here are some examples of instances of each entity.



Attributes Modeled as Property Instance (cont.)

PROPERTY

Article Type Name	No.	Desc.	...
SHIRT	1	Length	
SHIRT	2	Material	
SHIRT	3	Neck size	
SKIRT	1	Length	

ARTICLE

Article Type Name	Id	...
SHIRT	DNM105	
SKIRT	LIN200	
DRESS	SHF119	
PANTS	CHN407	

ARTICLE TYPE

Name	...
SKIRT	
SHIRT	
DRESS	
PANT	

ARTICLE PROPERTY VALUE

Article ID	Article Type Name	PROPERTY Number	Value	...
DNM105	SHIRT	1	40	
DNM105	SHIRT	2	Denim	
DNM105	SHIRT	3	16	
LIN200	SKIRT	1	22	

Generic Model Benefits

The benefits of a generic model include:

1. Flexibility: reduces the need to change data structures in the future.
2. Readability – reduces the number of entities dramatically.

The costs of a generic model include:

1. Increased complexity in both the data model and the application program.
2. Decreased performance.

Terminology

Key terms used in this lesson included:

- Generic
- Perspective

Summary

In this lesson, you should have learned how to:

- Define generic modeling
- Evaluate and describe the advantages and disadvantages of generic modeling
- Construct a generic version of a more specific data model