Data Modeling

Sang Shin www.javapassion.com "Learning is fun!"



Topics

- What is and Why Data Modeling?
- Steps of Data Modeling
- Relationship
- Normalization
- Data modeling tools

What is and Why Data Modeling?

What is Data Modeling?

- Act of exploring data-oriented structures and their relationship
- Something similar to class modeling in OO design

Why Data Modeling?

Abstraction

A well abstracted data model will be economical and flexible to maintain and enhance since it will utilize few symbols to represent a large body of design.

Transparency

A good data model enables its designer to perceive truthfulness of design by presenting an understandable picture of inherently complex ideas.

Effectiveness

An effective data model does the job accurately, reliably, and economically

Steps for Data Modeling

Steps for Data Modeling

- Identify entity types
- Identity attributes
- Apply naming conventions
- Identify relationships
- Assign keys
- Normalize

These steps are iterative!

Relationship

Types of Relationship

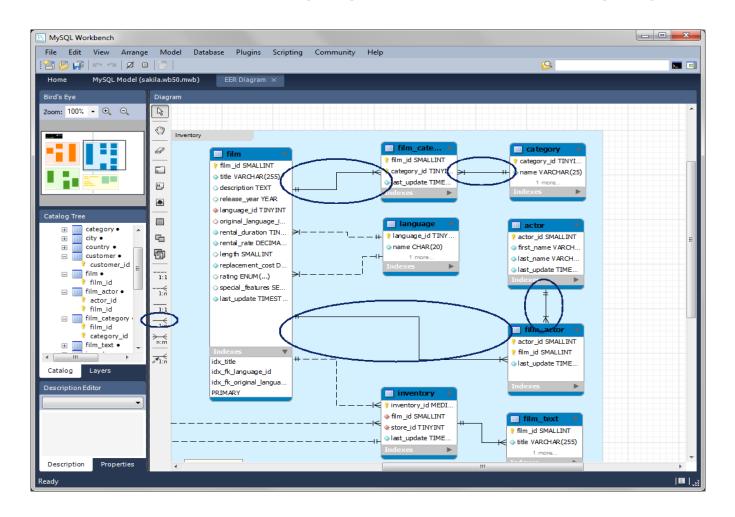
- 1:1 Identifying relationship
- 1:1 Non-identifying relationship
- 1:n Identifying relationship
- 1:n Non-identifying relationship
- n:m Identifying relationship

Identifying vs Non-Identifying Relationship

- Identifying relationship Child table cannot be uniquely identified without the parent
 - A join-table (intersection table) used to resolve a many-to-many relationship where the intersecting table's Primary Key is a composite of the left and right (parents) table's Primary Keys.
- Non-identifying relationship Child table can be identified independently of the parent

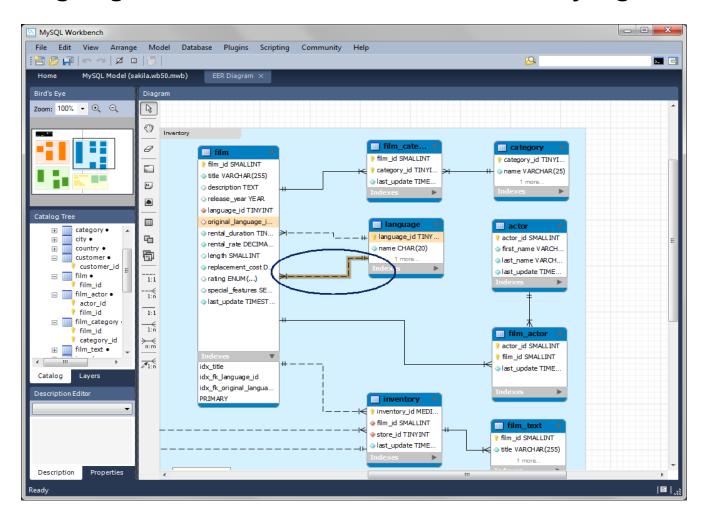
1:n Identifying Relationship

film and film-category have 1:n identifying relationship



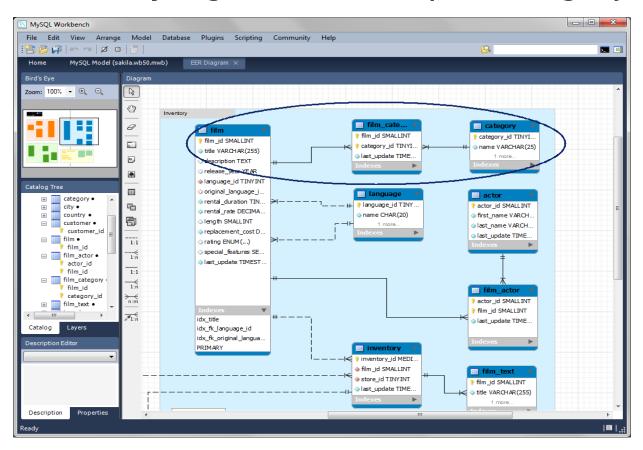
1:n Non-identifying Relationship

language and film have 1:n non-identifying relationship



Many-To-Many Relationship

 Many-to-Many relationship via two identifying relationship through join table



Normalization

What is Normalization?

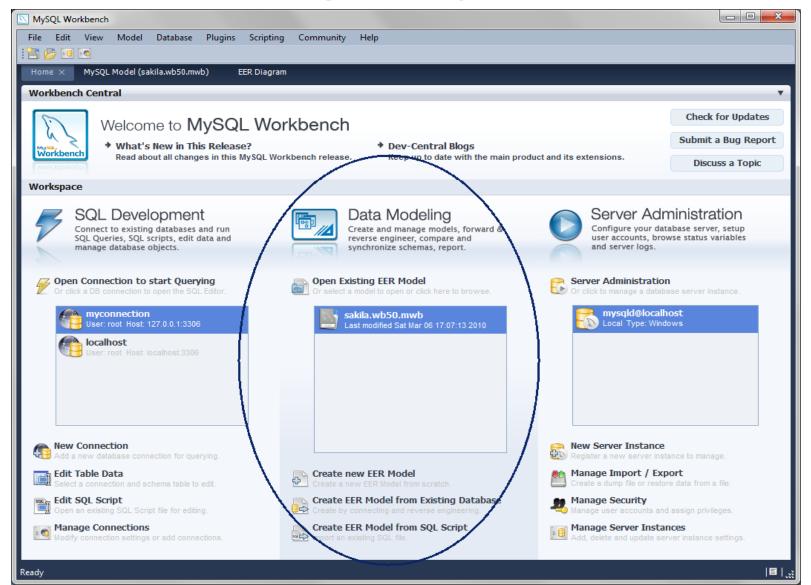
- Is an effort of reducing data redundancy
- Information is stored in one place and one place only
- Reduce the possibility of inconsistent data
- Could result in performance degradation

Data Modeling Tools

Data Modeling Tools

- There are many
 - http://www.databaseanswers.org/modelling_tools .htm
- MySQL Workbench
 - Create and manage models
 - Forward and reverse engineer
 - Compare and synchronize schemas
 - > Report

Data Modeling in MySQL Workbench



Thank you!

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