Design Principles of E-R Models

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Outline

Design Principles of E-R Modeling

- ▶ Be faithful to the specification
- ▶ Avoid redundancy
- ▶ Simplicity counts
- ▶ Choose the right relationships
- ▶ Pick the right kind of elements

Outline

Be faithful to the specification

▶ Entity sets and their attributes should reflect reality

▶ Relationships should make sense

However, sometimes it is not always obvious.

▶ Is "teaches" a many-to-one relationship from Courses to Instructors?

Outline

Avoid Redundancy

The model should be careful to state everything once only.

Consider `Courses`, `Instructor`, and their relationship `teaches`, should "instructor name" be an attribute of entity set `Courses`?

Outline

Simplicity Counts

Avoid introducing more elements into the model than is absolutely necessary.

Use your judgement. Can you remove entity sets?

Outline

Choose the Right Relationships

▶ Sometimes, there are more than one way to connect entity sets. However, adding to our design every possible relationship is often not a good idea. → redundancy?

▶ Relationships should reflect reality

▶ Are Movies, Studios, and Stars a ternary relationship or multiple binary relationships or both?

Outline

Pick the Right Kind of Element

Sometimes, it is not obvious how we should model reality, e.g., can we use an attribute other than an Entity set?

Should `Studios` be an entity set? Could we just add attributes `studio name` and `studio address` to `Movies` and then eliminate `Studios`?