

Design Principles of E-R Models

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February 9, 2022

Outline

- 1 Faithfulness
- 2 Avoid Redundancy
- 3 Simplify
- 4 Choose Relationships
- 5 Picking Elements
- 6 Assignments

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

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Be Faithful

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?

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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?

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Simplicity Counts

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

Use your judgement. Can you remove entity sets?

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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?

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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?

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Database Design Project

Phase 1 begins...