

The Relational Model

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ER and Relational

- The ER model is *conceptual*
 - Focus is on clearly indicating entities and relationships between them
 - Notation for representing different types of constraints and higher-order relationships
- The relational model is *logical*
 - Focus is on representing the data
 - No distinction between entities and relationships; no visualization
- How do these two models relate to each other?

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Translating ER to Relational

- Entity sets to tables:
 - Each entity set in the ER becomes a relation
 - Entity set attributes become relation fields
 - Entity set key becomes relation key and a primary key is chosen
 - Define domains as necessary
 - Entities become records with field values set to attribute values

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Translating ER to Relational

- Relationship sets to tables:
 - Each relationship set in the ER becomes a relation
 - The primary key attributes of the entity sets in the relationship become fields in the relation defined as foreign keys
 - The descriptive attributes of the relationship set become fields in the relation
 - And defined domains
 - The primary key is defined as the set of foreign key fields

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Translating ER Model Features

- Recall features of ER model:
 - Key constraints
 - Participation constraints
 - Weak entity sets
 - Class hierarchies
 - Aggregation
- All of these can translate to the relational model; all can be formulated in the SQL DDL
 - Some are pretty difficult though

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Translating Key Constraints

- Relationship sets with 1:1 or 1:n constraints
- First translate the relationship set to a relation
- Then you can either:
 1. Reduce the relation primary key set to only the key of the most-constrained entity set, or
 2. Consolidate the new relation and the relation representing the most-constrained entity set

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