CSc 134 Database Management and File Organization

4. Relational Database Design by ER-to-Relational Mapping

Ying Jin
Computer Science Department
California state University, Sacramento

ER to Relational Mapping

- ER is a conceptual model
- Map conceptual model to representational /implementation model

(Strong) Entity

- Create a relation for the entity
- Include all the simple attribute and simple composite attributes of a composite attribute

Weak Entity

- The primary key of an weak entity is the combination of the primary key of the owner (s) and the partial key of the weak entity.

1:1 Relationship

- Chose one entity to include the primary key of the other entity as *foreign key*.
- Include simple attributes of the relationship
- It is better to choose an entity type with total participation.

1:N Relationship

- The entity at N side includes the primary key of the entity at 1 side as foreign key.
- The entity at N side includes simple attributes of the relationship

1:N Recursive Relationship

- The entity includes the primary key of itself as foreign key to represent the recursion

M:N Relationship

- Create a new relation for the relationship
- Include the primary keys of the two entities as foreign keys.
- The combination of two foreign keys as the primary key of the new relation.

Multivalued Attributes

- Create a new relation R for a multivalued attribute A (of entity E).
- R includes an attribute corresponding to A and the primary key of E as the foreign key.
- The combination of A and this foreign key as the primary key of R.

These slides based on the textbook:

R. Elmaseri and S. Navathe, *Fundamentals of Database Systems*, 6th Edition, Addison-Wesley. Chapter 9.