Relational Database Design
Part II

CPS 116

Introduction to Database Systems

Announcements (September 6)

- Homework #1 due in 1½ weeks
  - Start early!!!
- Details of the course project and a list of suggested ideas will be available next Tuesday

Database design steps: review

- Understand the real-world domain being modeled
- Specify it using a database design model (e.g., E/R)
- Translate specification to the data model of DBMS (e.g., relational)
- Create DBMS schema

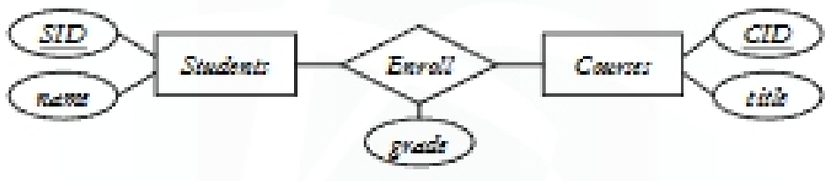
☛ Next: translating E/R design to relational schema

E/R model: review

- Entity sets
  - Keys
  - Weak entity sets
- Relationship sets
  - Attributes on relationships
  - Multiplicity
  - Roles
  - Binary versus N-ary relationships
    - Modeling N-ary relationships with weak entity sets and binary relationships
  - ISA relationships

Translating entity sets

- An entity set translates directly to a table
  - Attributes → columns
  - Key attributes → key columns

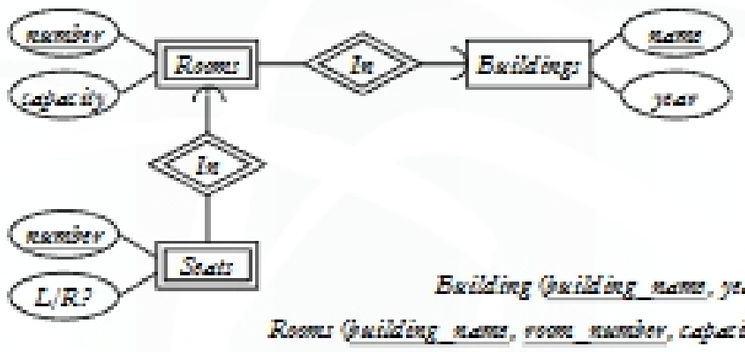


Student (*SID*, *name*)

Cours (*CID*, *title*)

Translating weak entity sets

- Remember the "borrowed" key attributes
- Watch out for attribute name conflicts



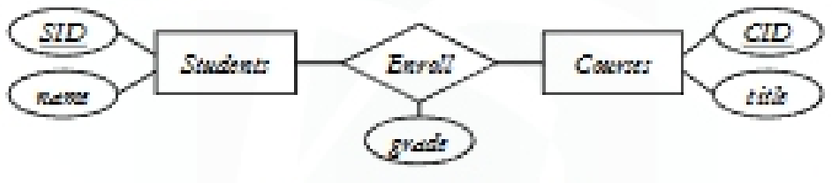
Building (*building_name*, *year*)

Rooms (*building_name*, *room_number*, *capacity*)

Seats (*building_name*, *room_number*, *seat_number*, *left_or_right*)

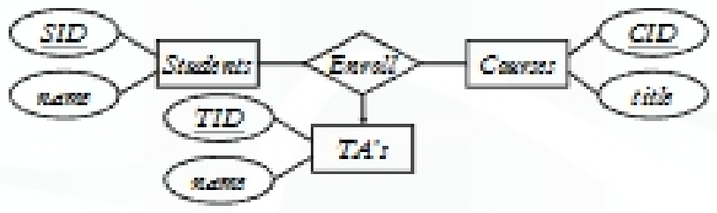
Translating relationship sets

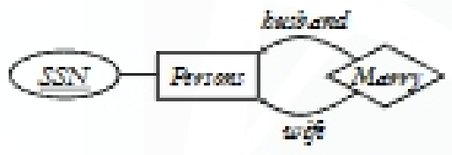
- A relationship set translates to a table
  - Keys of connected entity sets → columns
  - Attributes of the relationship set (if any) → columns
  - Multiplicity of the relationship set determines the key of the table



Enroll (SID, CID, grade)

More examples

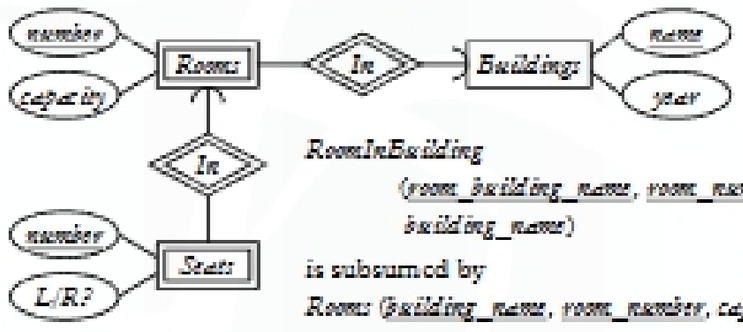




Marry (husband_SSN, wife_SSN)

Translating double diamonds

- Recall that a double-diamond relationship set connects a weak entity set to another entity set
- No need to translate because the relationship is implicit in the weak entity set's translation



RoomInBuilding (room_building_name, room_number, building_name)

is subsumed by

Rooms (building_name, room_number, capacity)