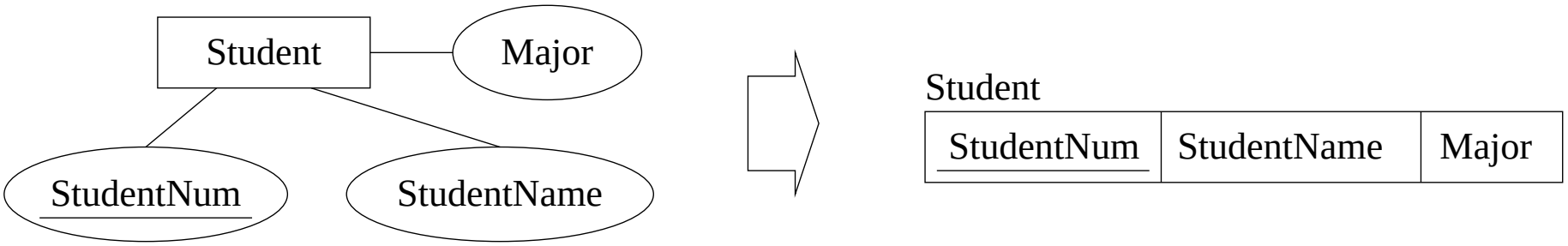
Translating an E-R Model to a Relational Schema

- Main ideas:
  - Each entity set maps to a new table
  - Each attribute maps to a new table column
  - Each relationship set maps to either new table columns or to a new table

Representing Strong Entity Sets

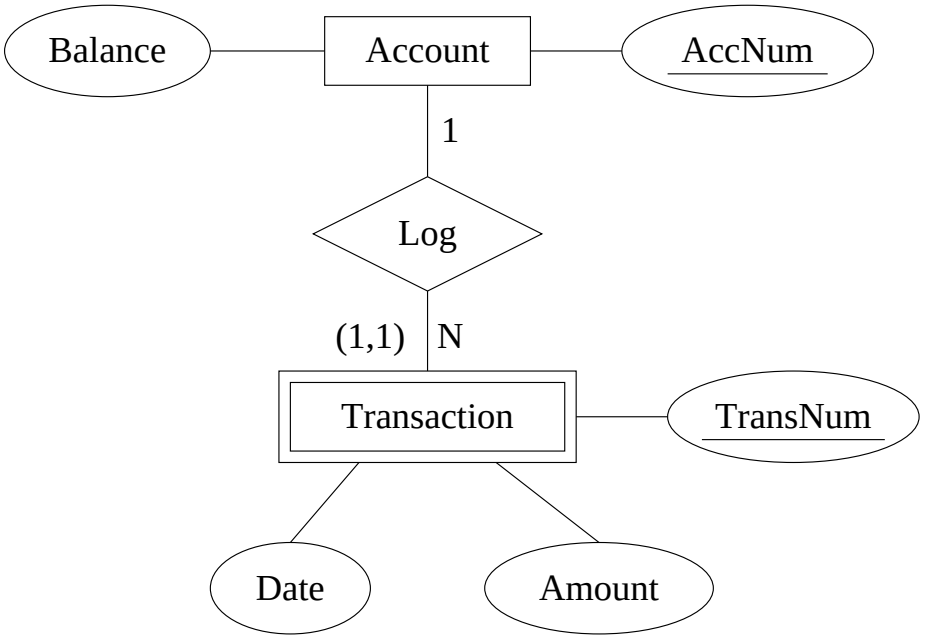
- Entity set E with attributes $a_1, \ldots, a_n \rightarrow$ table E with attributes $a_1, \ldots, a_n$
- Entity of type $E \leftrightarrow$ row in table E
- Primary key of entity set $\rightarrow$ primary key of table



Representing Weak Entity Sets

- Weak entity set $E \rightarrow$ table E
- Columns of table E should include
  - Attributes of the weak entity set
  - Attributes of the identifying relationship set
  - Primary key attributes of dominating entity set (as foreign key into dominating entity set)
- Primary key of weak entity set $\rightarrow$ primary key of table

Representing Weak Entity Sets (cont'd)



Account

AccNum	Balance

Transaction

TransNum	AccNum	Date	Amount

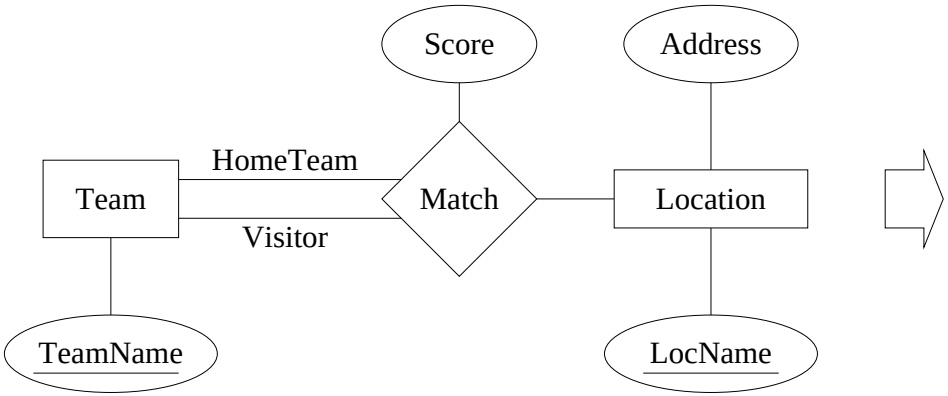
Representing Relationship Sets

- If the relationship set is an identifying relationship set for a weak entity set then no action needed
- If the general cardinality constraint (1,1) can be deduced for a component entity set E then add following columns to table E
  - Attributes of the relationship set
  - Primary key attributes of remaining component entity sets (as foreign keys into those entity sets)
- Otherwise: relationship set $R \rightarrow$ table R

Representing Relationship Sets (cont'd)

- Columns of table R should include
  - Attributes of the relationship set
  - Primary key attributes of each component entity set (as foreign keys into component entity sets)
- Primary key of table R determined as follows
  - If the general cardinality constraint (0,1) can be deduced for a component entity set E, then choose the primary key attributes for E
  - Otherwise, choose primary key attributes of each component entity

Representing Relationship Sets (cont'd)



Team

TeamName

Location

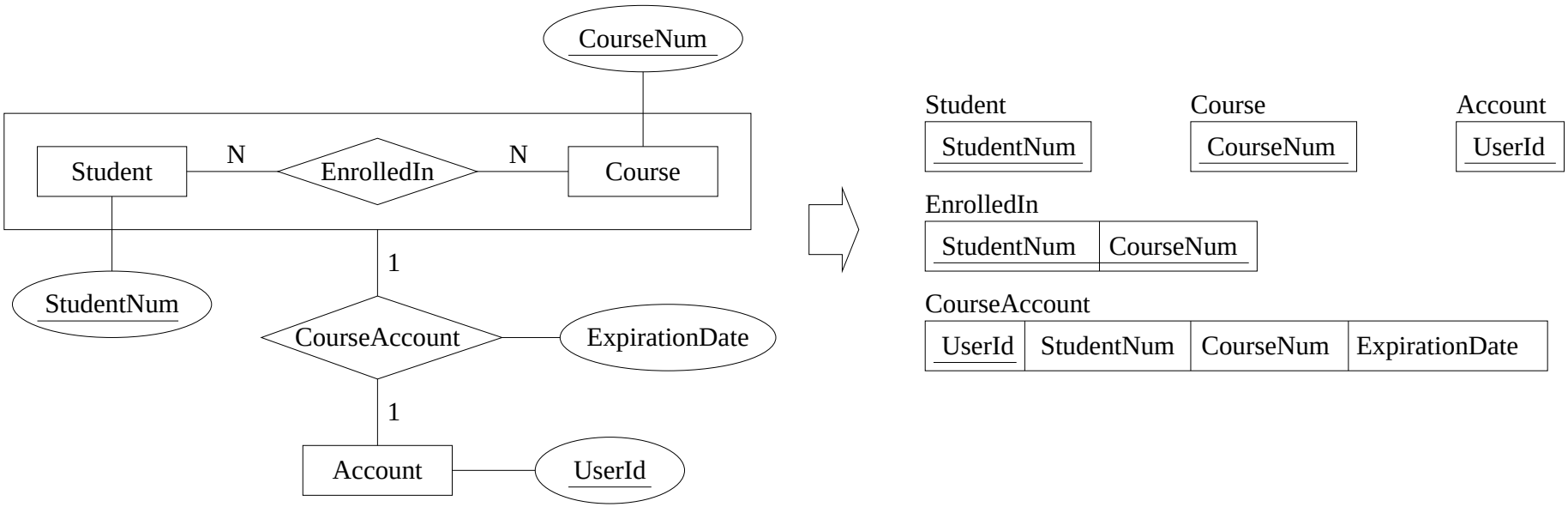
LocName	Address

Match

HomeTeamName	VisitorTeamName	LocName	Score

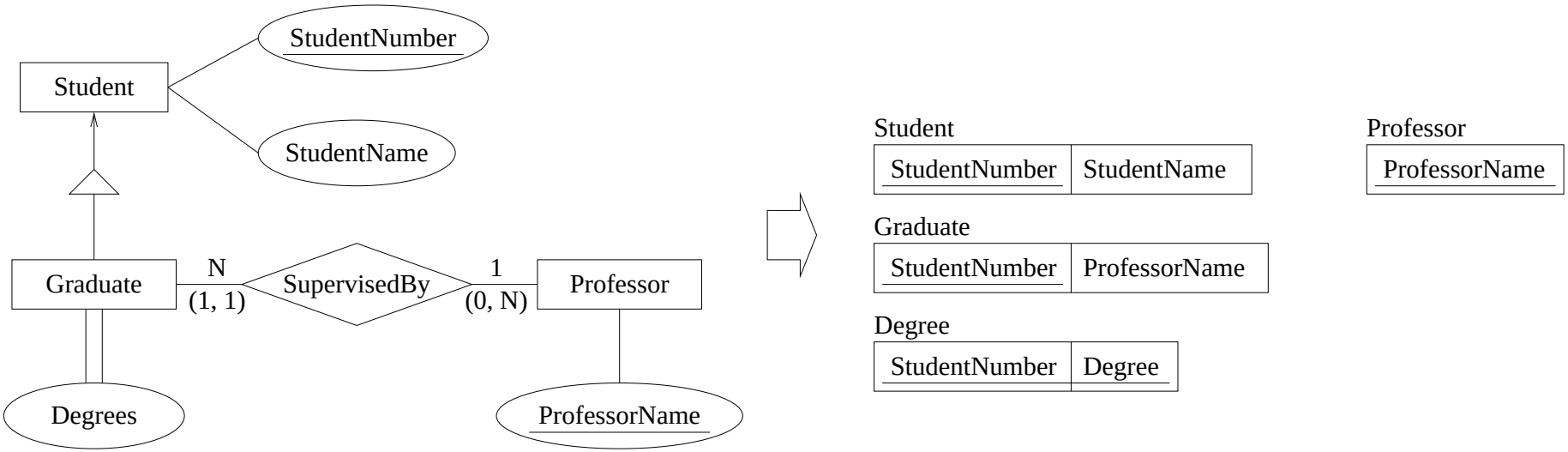
Representing Aggregation

- Tabular representation for aggregation of relationship set R $=$ tabular representation for relationship set R
- To represent relationship set involving aggregation of R, treat the aggregation like an entity set whose primary key $=$ primary key of the table for R



Representing Specialization

- Create table for higher-level entity set, and treat specialized entity subsets like weak entity sets



Example Translation