Relation

About Relational Model

◆ Attributes values must be atomic
◆ No order among attributes
◆ No order among tuples

Convert ER Diagram to Relations

◆ Entity sets
◆ Relationships
◆ Weak entity sets
◆ Subclasses

Entity Sets

Drinkers( name, addr )

Drinkers

Drinks( name, manf )

Buddies

Married

Relationships

Drinkers

Likes

Beers

Buddies

Favorite

Married

Drinkers

??
Combining Relations

Drinkers + Likes ?
Drinkers + Favorite ?
Beers + Likes ?
Beers + Favorite ?

Weak Entity Sets

- Relation for a weak entity set includes its complete key as well as its own non-key attributes.
- A supporting relationship is redundant and yields no relation.

Weak Entity Set Example

Players

Teams

Plays-on

Teams( ?? )
Players( ?? )
Plays-on ??

Subclasses

- Object-oriented approach
  - One relation per class
  - Each entity belongs to exactly one relation
- ER approach
  - One relation per class
  - Each entity may appear in multiple relations
- NULL approach
  - One relation per class hierarchy

Subclass Example

Object-Oriented Approach

<table>
<thead>
<tr>
<th>name</th>
<th>manf</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bud</td>
<td>Anheuser-Busch</td>
</tr>
<tr>
<td>Ales</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>name</th>
<th>manf</th>
<th>color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summerbrow</td>
<td>Pete’s</td>
<td>dark</td>
</tr>
<tr>
<td>Ales</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ER Approach

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Beers

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Ales

NULL Approach

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Beers

Another Subclass Example

Comparison of Subclass Conversion Approaches

- Constraints and data integrity
- Query performance

Q1: find all beers made by Pete's
Q2: find colors of the ales made by Pete's