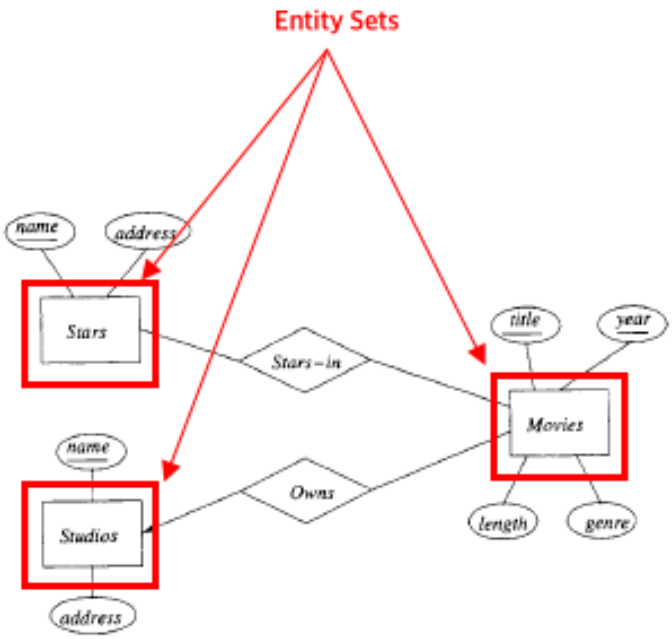
CSC343 Worksheet 14 Solution

July 7, 2020

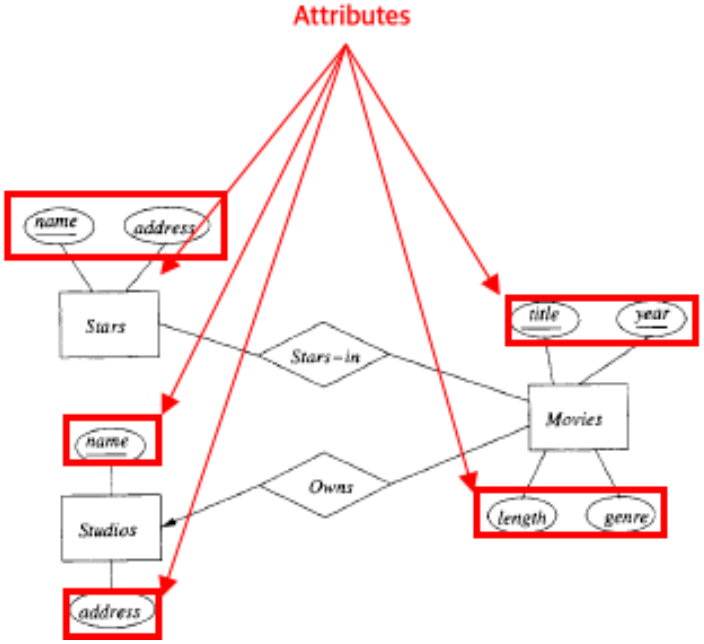
1. **Notes:**

- E/R Model
  - Means **Entity Relationship Model**
  - Entity Relationship Model(ER Modeling) is a graphical approach to database design.
  - Is comparable to class diagram in UML
  - Uses three principle element types:
    1. Entity sets
       * Is an abstract object of some sort (i.e. entitiy)
       * Is not used to represent class
       * Is represented by rectangles

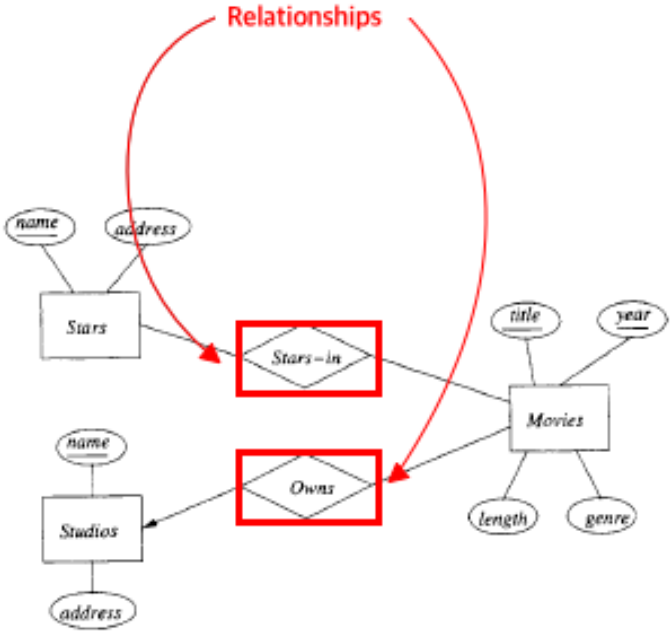


    2. Attributes
       * Are properties of entities in a set (i.e. column name)

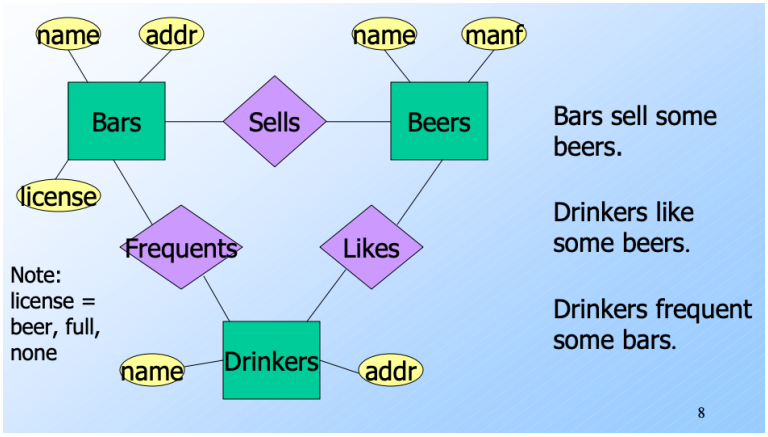
* Each has its own primitive data types (e.g. String, integers, Reals)
* Is represented by ovals



3. Relationships
   * Are connections among two or more entity sets (e.g. intermediary Relations like Stars In)
   * Is represented by diamond

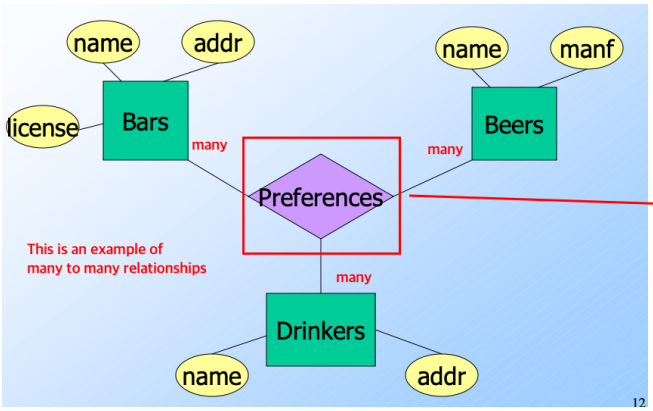


Example:



- Multiway Relationships
  - Connects more than two relationship sets
  - Enables to represent relationships that otherwise is difficult in binary relationship
  - Arrow → 'one'
  - No arrow → 'many'

Example:



Bar	Drinker	Beer
Joe's Bar	Ann	Miller
Sue's Bar	Ann	Bud
Sue's Bar	Ann	Pete's Ale
Joe's Bar	Bob	Bud
Joe's Bar	Bob	Miller
Joe's Bar	Cal	Miller
Sue's Bar	Cal	Bud Lite

Example 2:

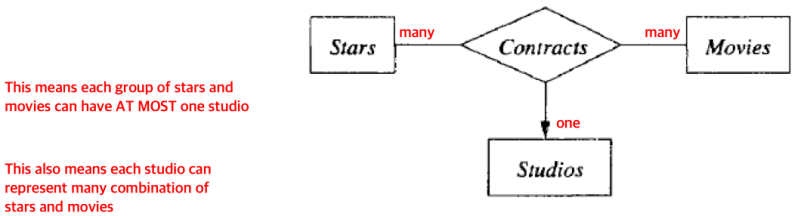


Figure 4.4: A three-way relationship

- Roles in Relationships
  - Is the label of edges between the entity set and relationship
  - Are used to clarify the sementics of relationship

Example:

Means for each sequel, there is only one original

And for each movies, there are many sequels

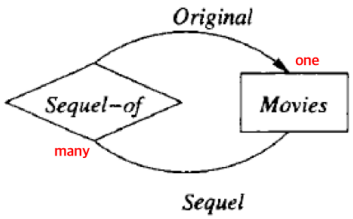


Figure 4.5: A relationship with roles

Example 2:

This means for each combination of stars and movies, there can be a one stduio for star, and one studio for movie

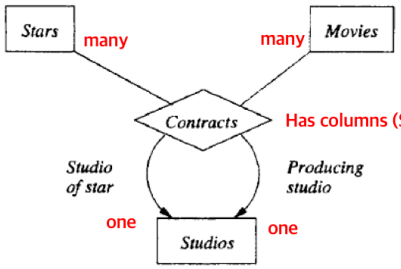
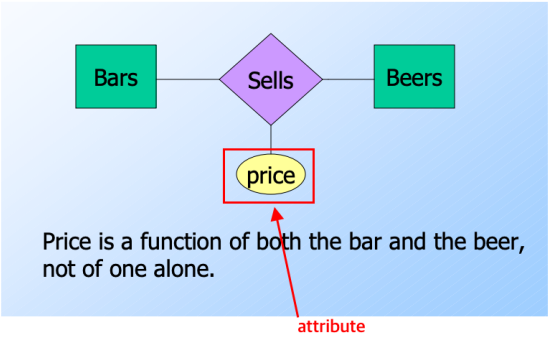


Figure 4.6: A four-way relationship

- Attributes on Relationships
  - can be thought as a property of tuples in the relationship set (i.e. String, Integer, Float, Boolean)

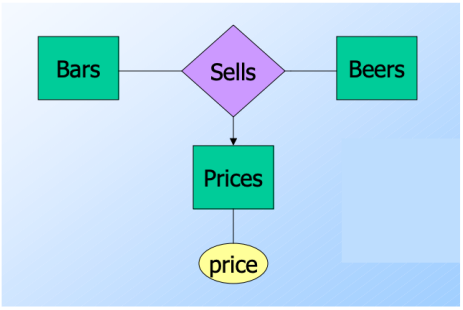
    Example:



Bar	Beers	Price
Bar 1	Canadian	10.99
Bar 2	Budwiser	20.99
Bar 1	Hite	4.99
Bar 1	Cass	15.99

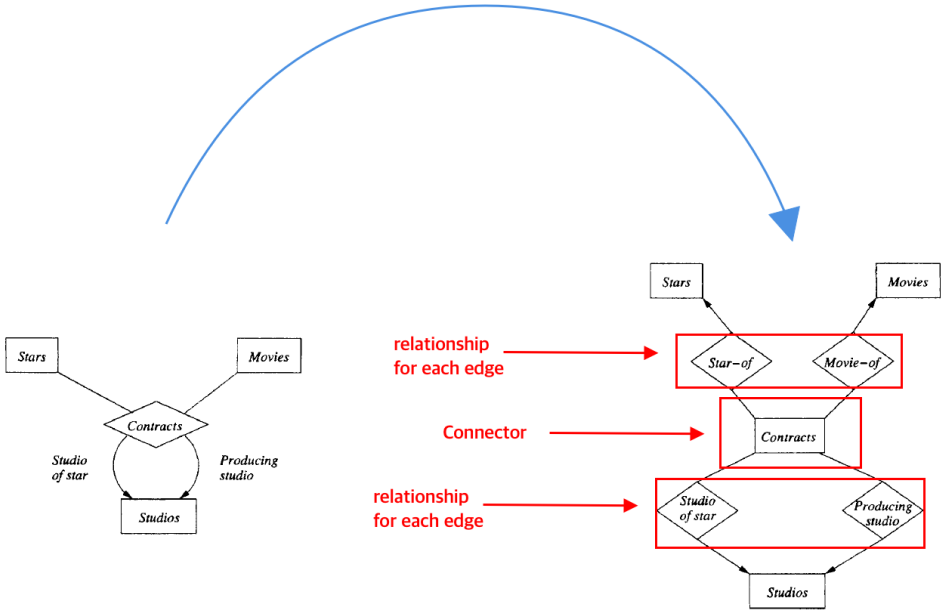
– Can be removed by creating an entity set with the attribute

Example:



- Converstings Multiway Relationships to Binary

Example:



- Subclasses in the E/R Model
  - Has its own special attributes and/or relationships
  - All '*isa*' relationship is <u>one to one</u>
  - Is represented by triangle with label '*isa*' followed by entity set

<u>Example:</u>