Entity-relationship diagram

We consider the example of a world about movies, their stars and the studios that produce them.

A movie can contain several stars. A movie is produced by only one studio. A movie can be a sequel of another movie: the original movie. Among the kinds of movies we might store cartoons, adventures and comedies. We decide to define these entity types as subclasses of the entity type Movie.

Design an ERD concerning this world. For each entity type give at least 3 attributes. Study the cardinalities of the relationship types you use. Study the ISA relation (covering, disjoint, partial, total).

Foreign key

Consider the following relations concerning the banking world:
$customer(\underline{cname}, cstreet, ccity)$
$branch(\underline{bname}, bcity, assets)$
$account(\underline{anumber}, bname, balance)$
$depositor(\underline{cname, anumber})$

1. How to define that the attribute *bname* in *account* must be a *valid* branch name?
2. How to define that the attributes *cname* and *anumber* in *depositor* must be a *valid* branch name?
3. What is checked when we add a new tuple in the relation *account*?
4. What is checked when we remove a tuple from the relation *branch*?

Relational Algebra

- Relations schemas:
  - $MovieTheather(\underline{tname}, address, phone)$
  - $Movie(\underline{mtitle}, country, year, type, producer)$
  - $Auditorium(\underline{\#audit, tname}, nbseats, dolby)$
  - $Program(\underline{tname, \#audit, mtitle}, databeginning, dateend, attendance)$
  - $StarsIn(\underline{mtitle, actorname})$
- 1. Give an example of instance of MovieTheater, Movie, Auditorium, Program and StarsIn.
  2. Names of all the movie theaters.
  3. Titles of all the movies.
  4. Titles and countries of the movies of type "Comedy".
  5. Names of the movie theaters that programmed a same movie in at least two different auditoriums.
  6. Addresses, auditoriums and their numbers of seats of the movie theaters where the movies of 1997 of Keanu Reeves were programmed.
  7. Names of the actors who didn't appear in a movie in the last two years.
  8. Names of the actors who played in all the movies of Luc Besson.
  9. Names of the movie theaters where appear all the movies produced in 1994.

From Entity-relationship to relational

Examples distributed in class.