



E-R Modeling: A Case Study

University of Alberta
Department of Computing Science
CMPUT 291 - File and
Database Management Systems



Goals

- Demonstrate how to build an E-R model from a simple database specification of a *video store*.
- Use Dia to draw E-R Diagram

Video store scenario:

- A video store rents movies to members
- Each movie in the store has a title and is identified by a unique movie number.
- A movie can be in one or multiple VHS, VCD and DVD formats.
- Each movie belongs to only one of a given set of categories (action, adventure, comedy...)

Scenario (cont'd)

- The store has a name and a (unique) phone number for each member.
- Each member may provide a favorite movie category (used for marketing purposes).

Scenario (cont'd)

- There are two types of members:

- **Golden Members**

- Require their credit cards and can rent more than one movies each time.

- **Bronze Members**

- Don't require their credit cards and can rent only one movie each time.

Scenario (cont'd):

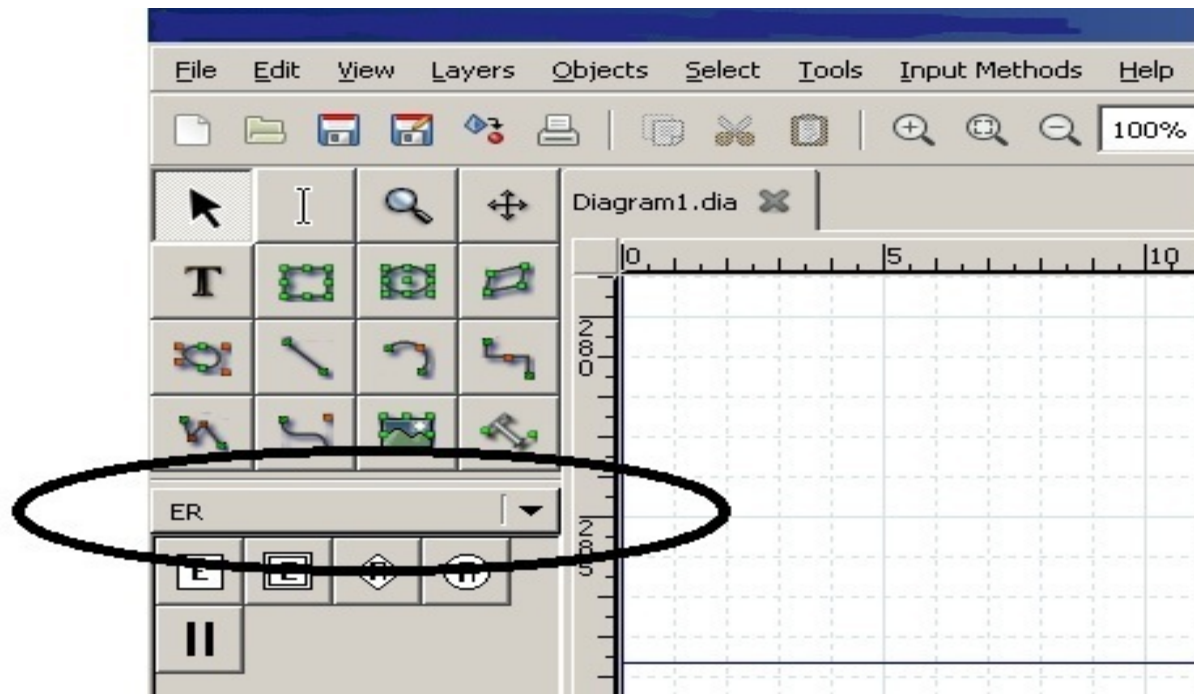
- A member may have a number of dependents (with known names).
- Each dependent is allowed to rent one movie at a time.

Draw E-R Diagram using Dia:

- What is Dia?
- Dia for Windows
<http://dia-installer.sourceforge.net>
- To launch Dia on lab machines, try
dia &

Dia

- Make sure that you select the right chart



A video store rents movies to members

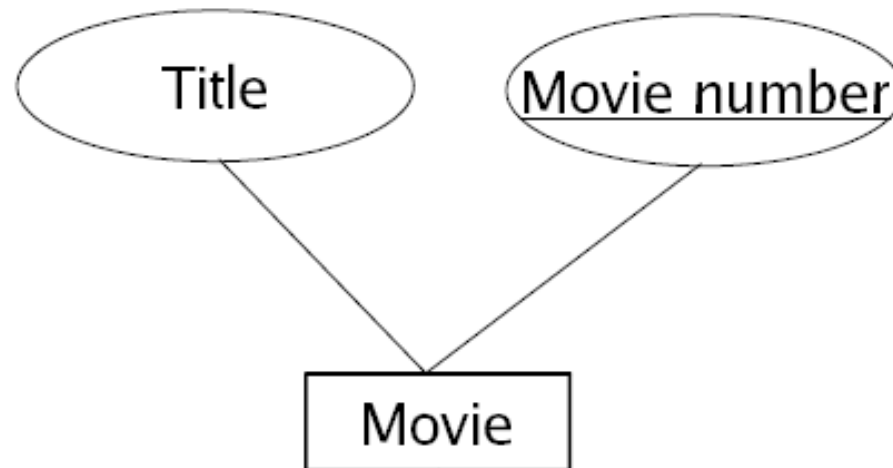
A video store rents movies to members.

Member

Movie

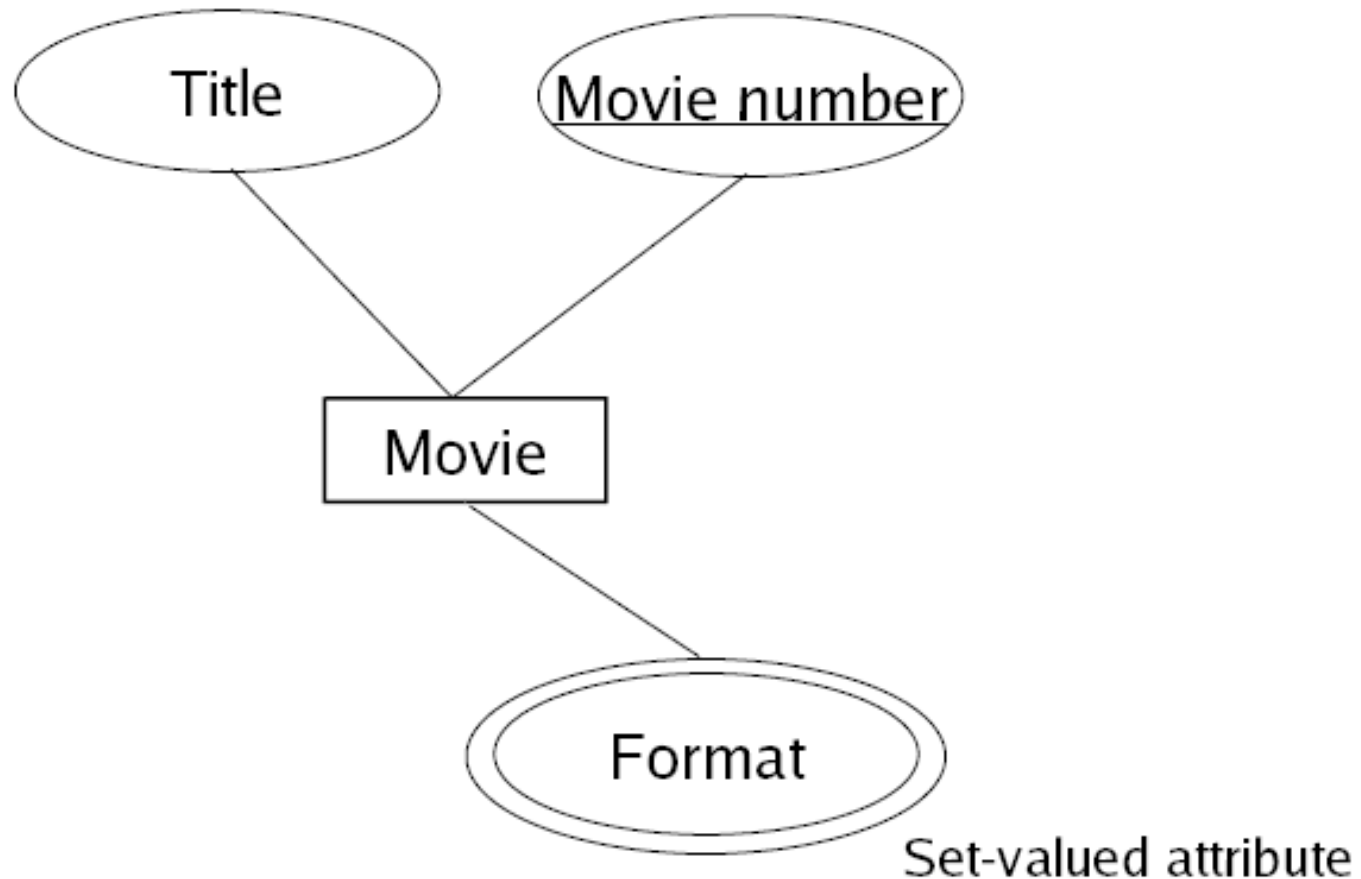
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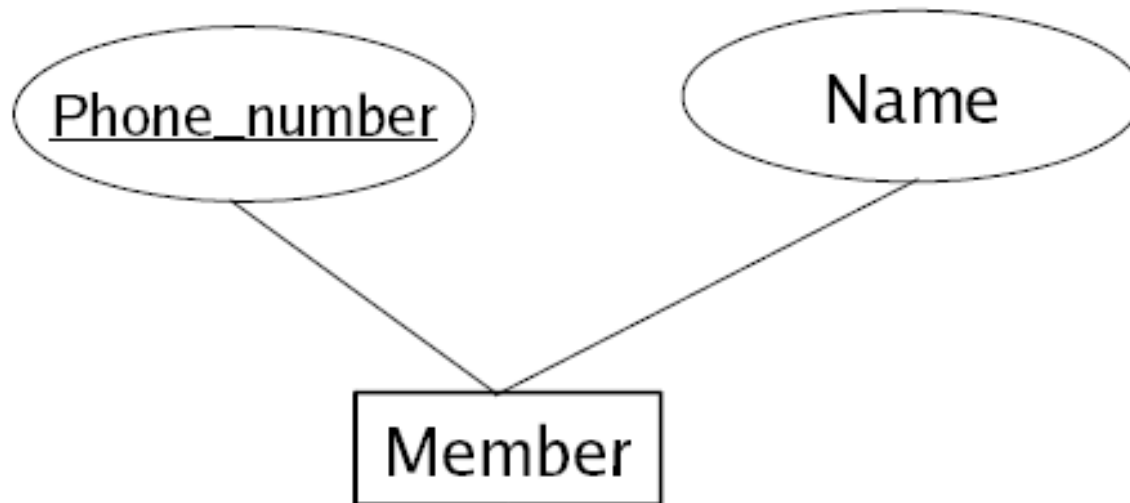
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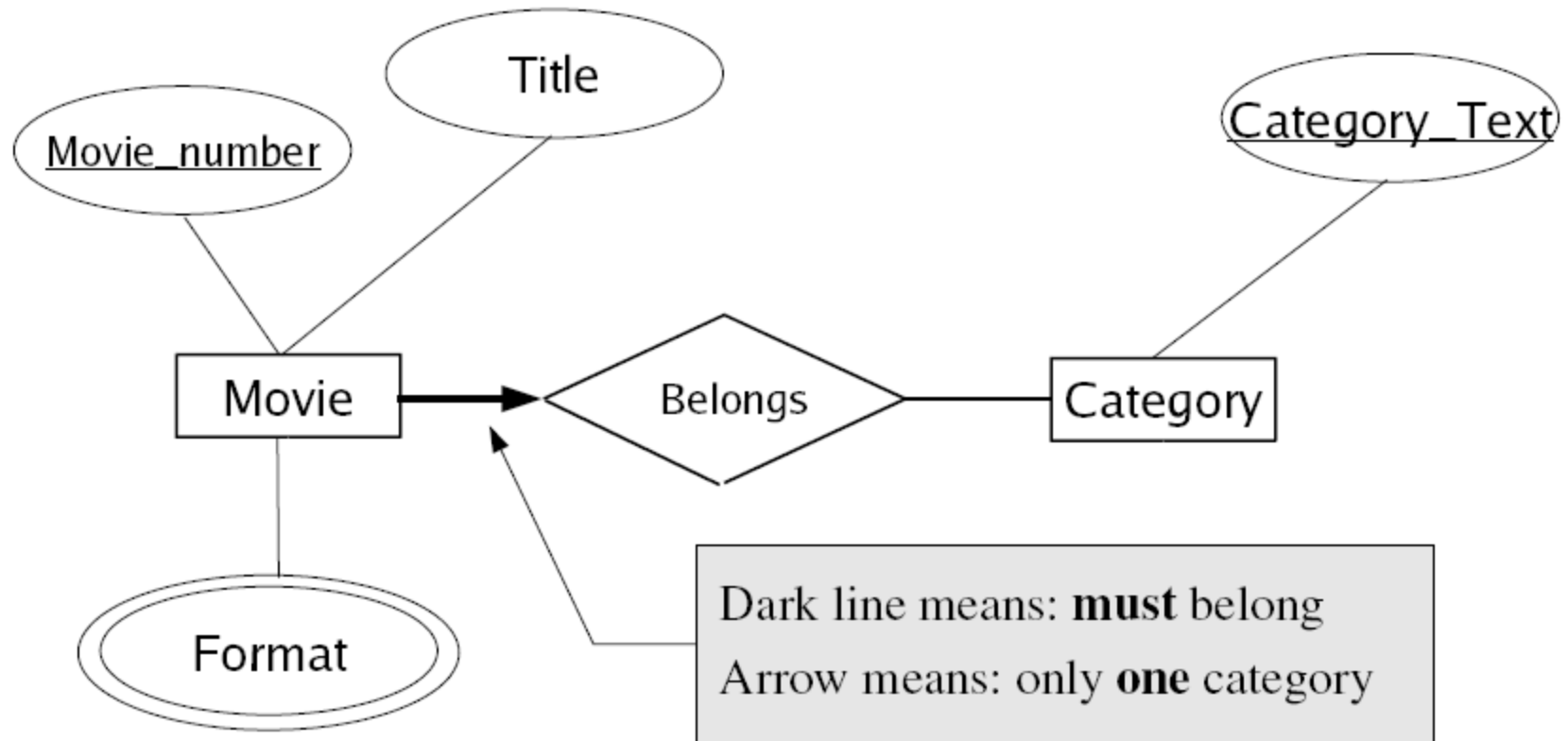
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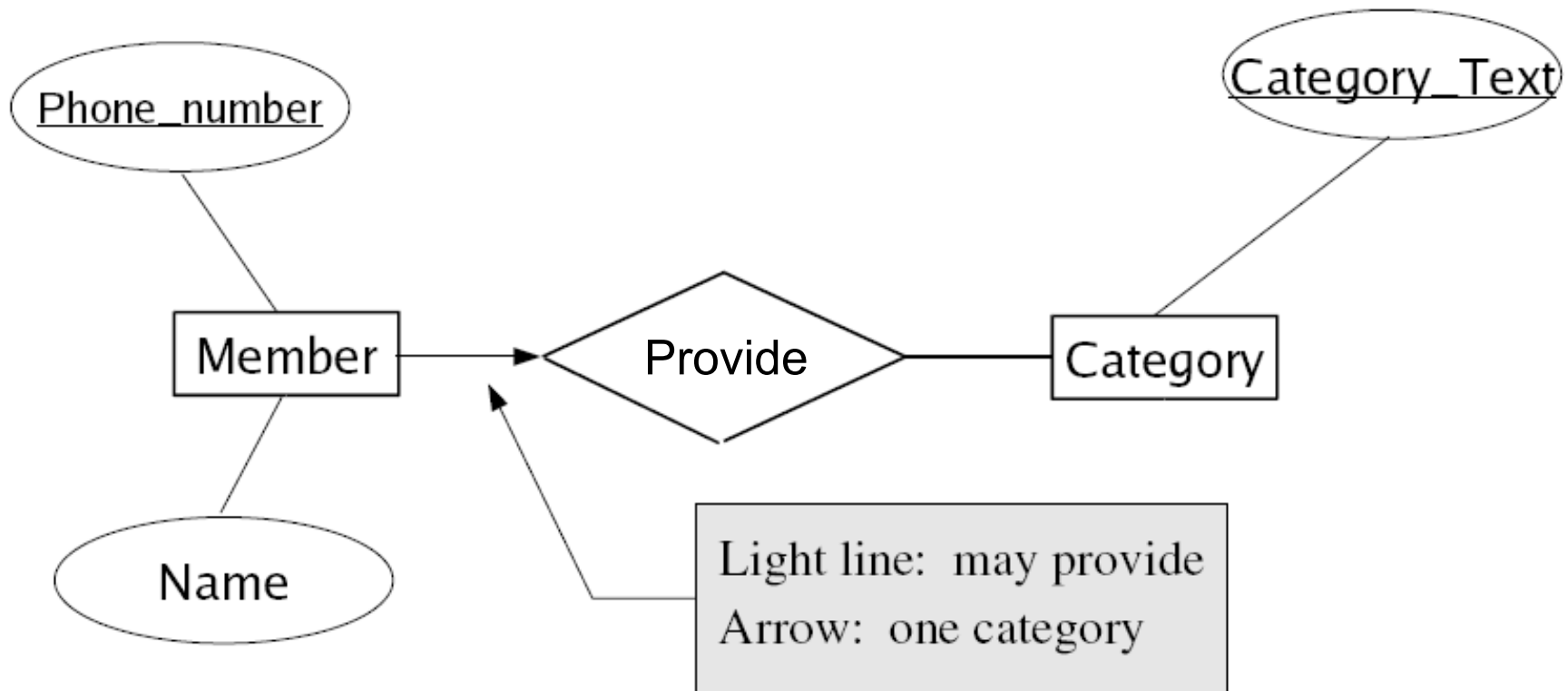
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- There are two types of members:

- **Golden Members**

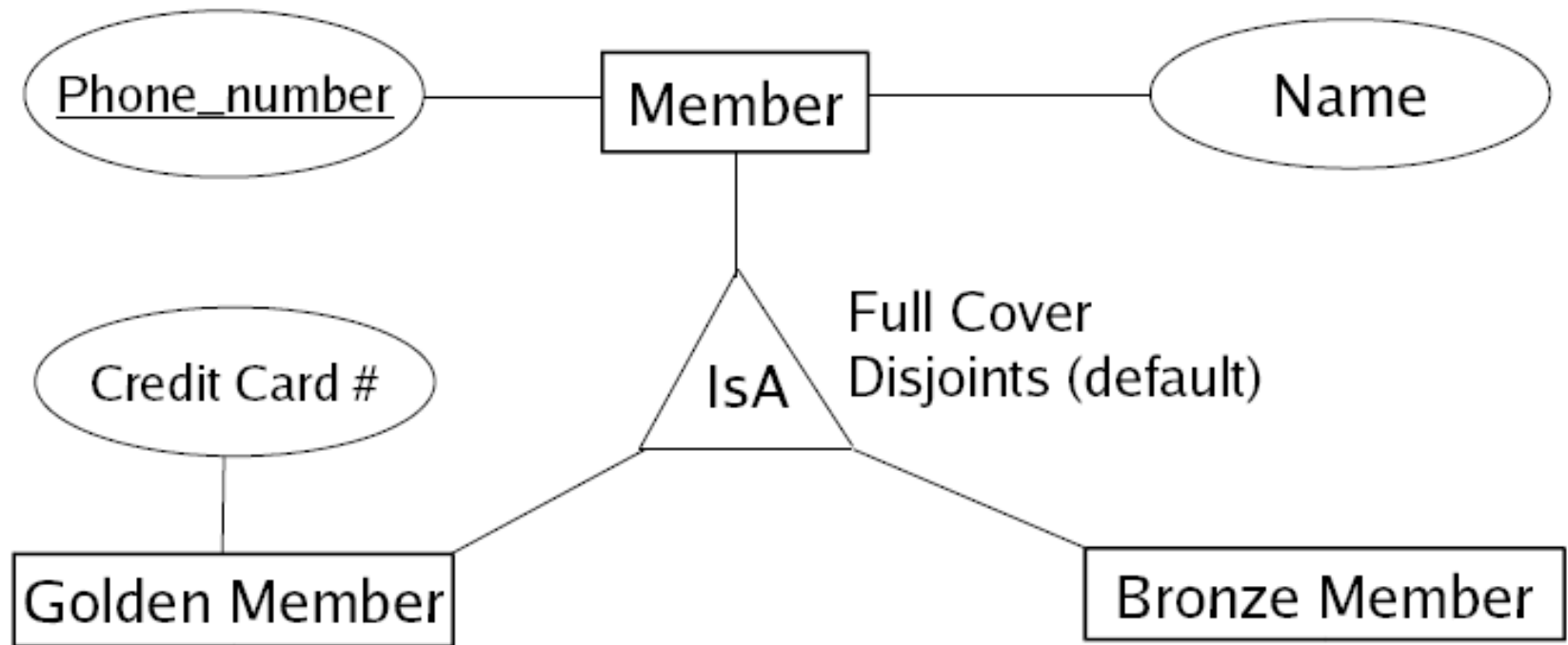
- Require their credit card and can rent more than one movie each time.

- **Bronze Members**

- Don't require their credit card and can rent only one movie each time.

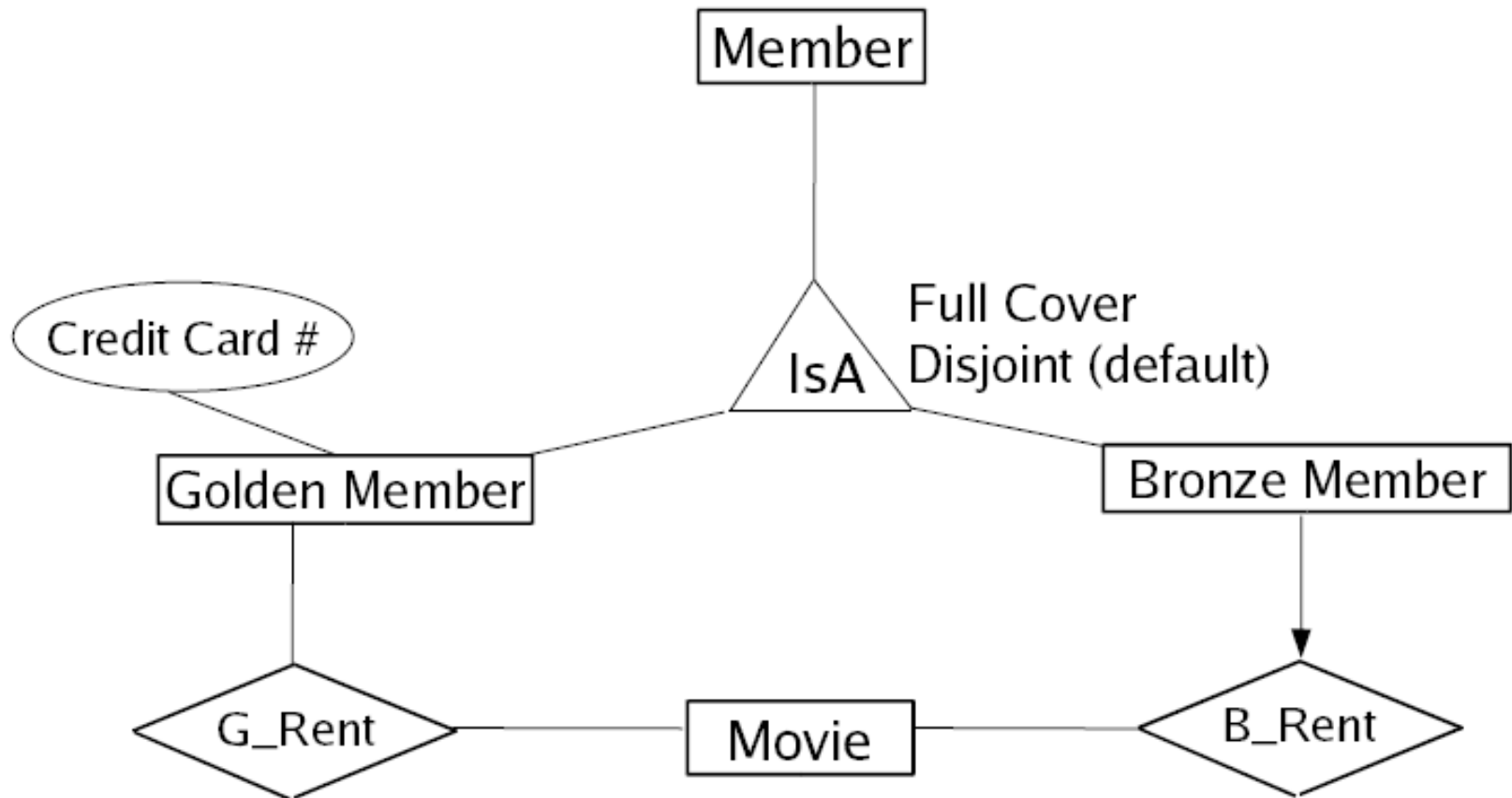
There are two types of members:

- **Golden Members:** provide credit card#
- **Bronze Members:** not provide credit card#

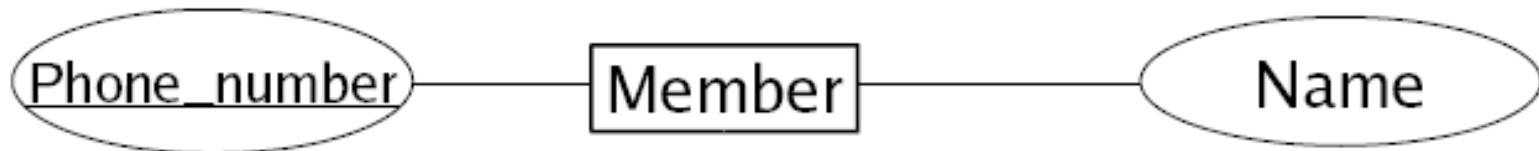


Golden Members can rent more than one movies.
Bronze Members can rent only one movie.

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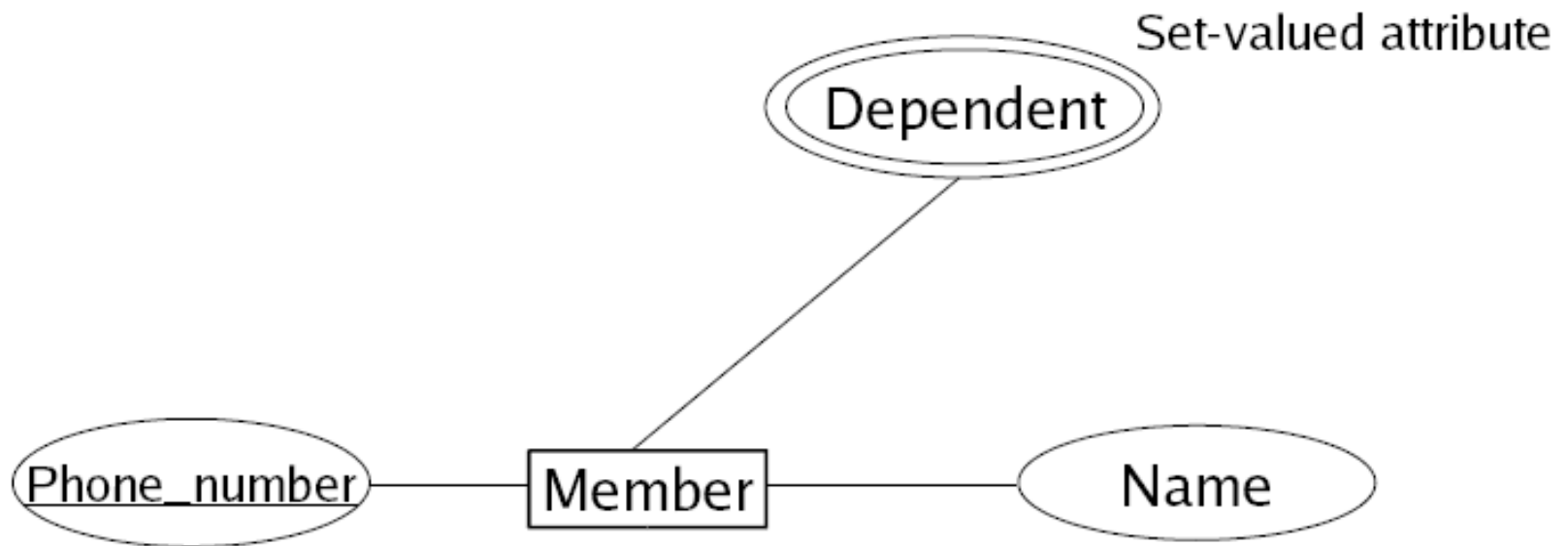


A member may have a set of dependents
(with known names)



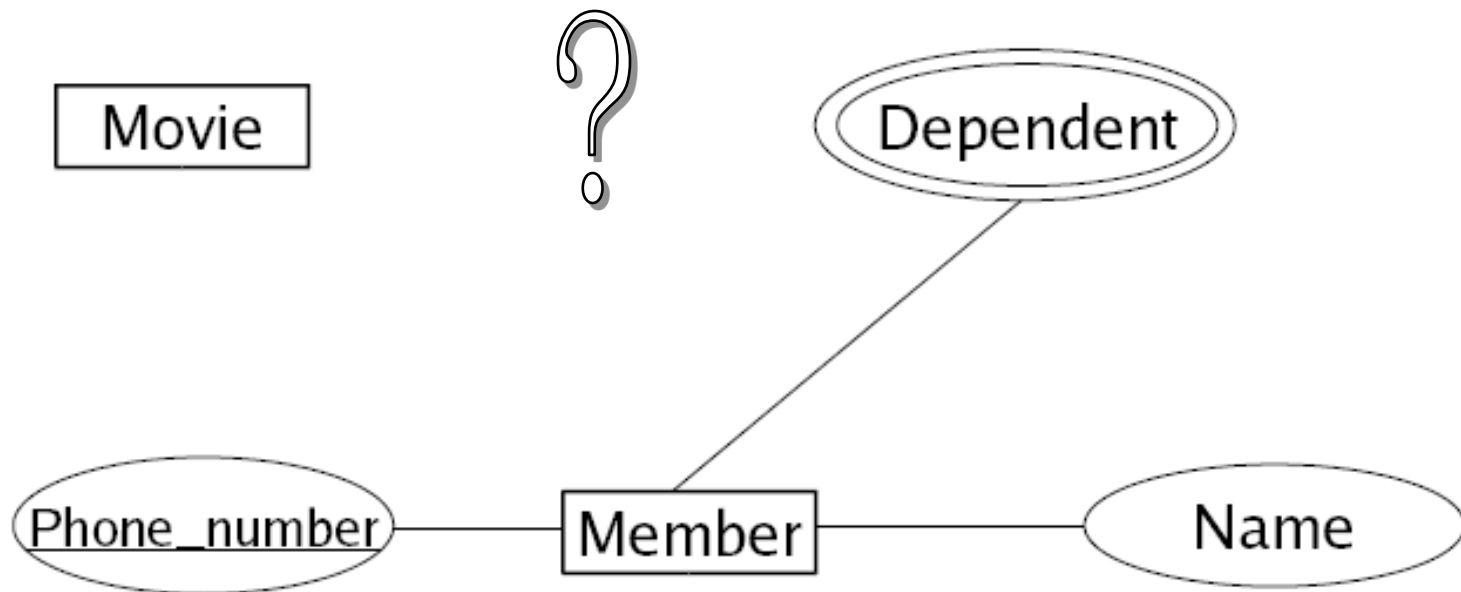
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One idea:



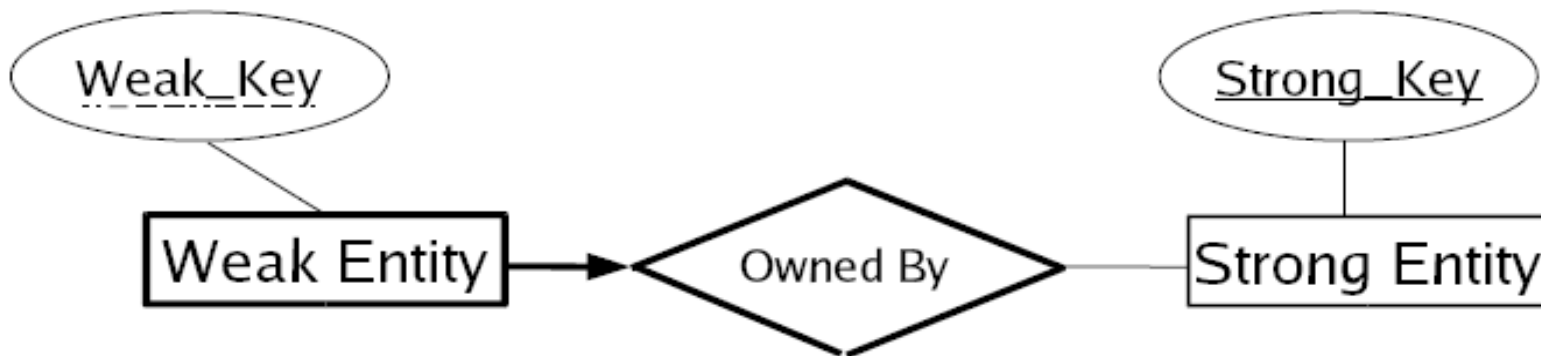
Each dependent is allowed to rent one movie.

Problem:

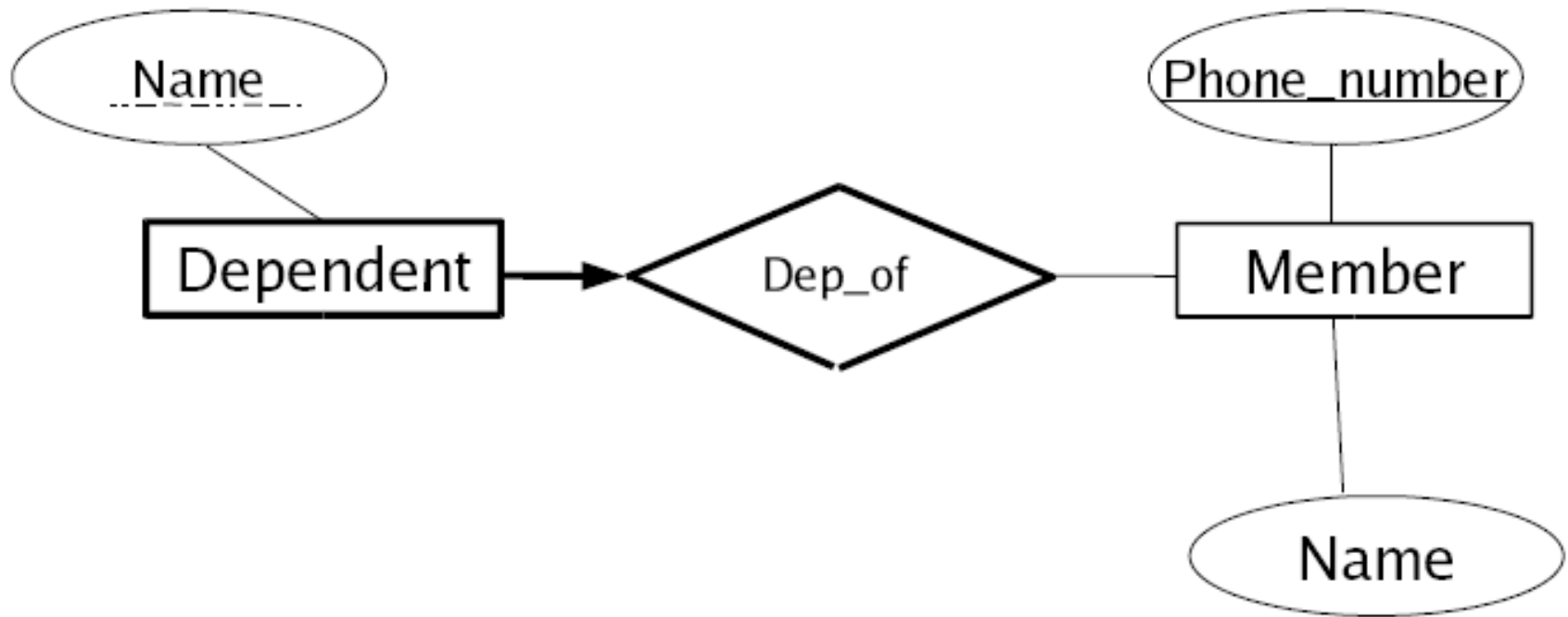


An attribute can not participate in a relationship!

- **Dependent** is an example of **Weak Entity**
 - Their existence depends on a strong entity.
 - They usually lack sufficient attributes to form a key.
- **Primary key** for a weak entity is formed by:
 - primary key of associated strong entity **PLUS**
 - the local attributes that provide individual identity.

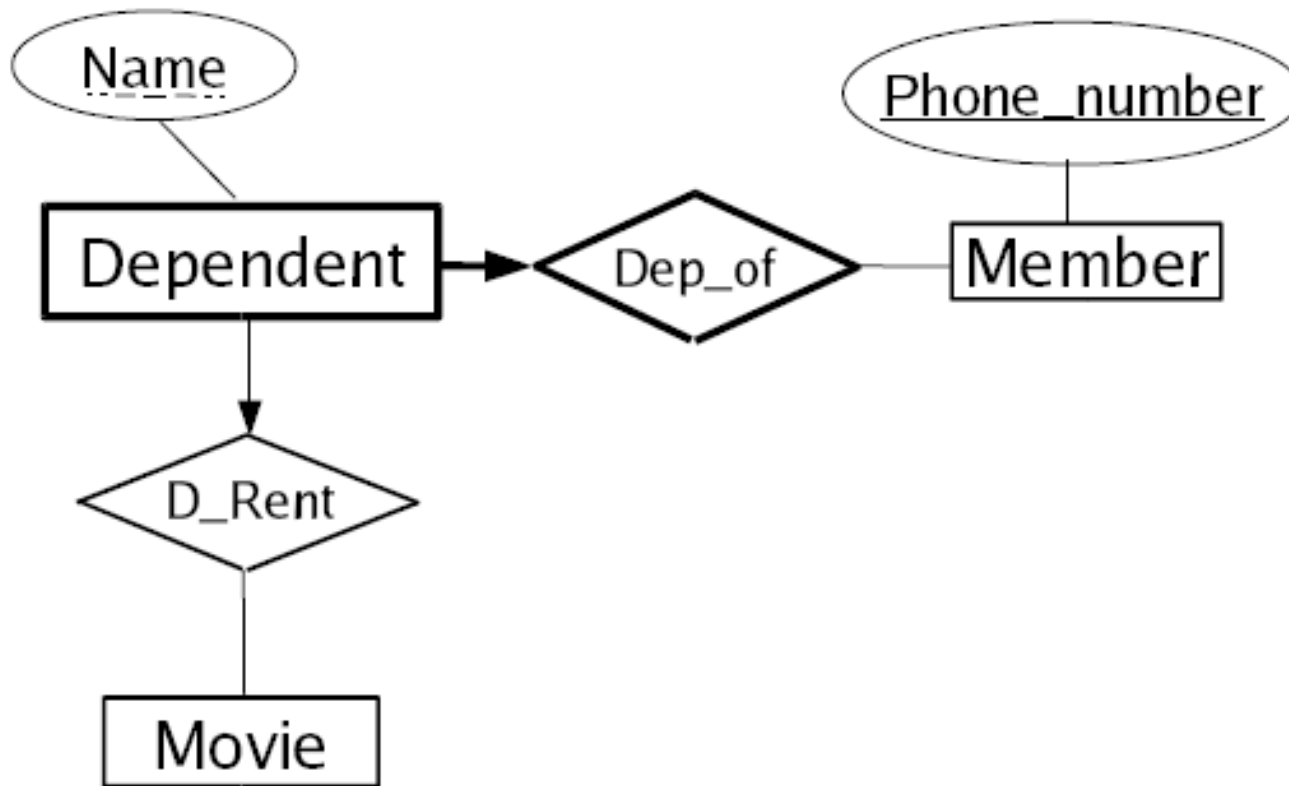


A member may have a set of dependents
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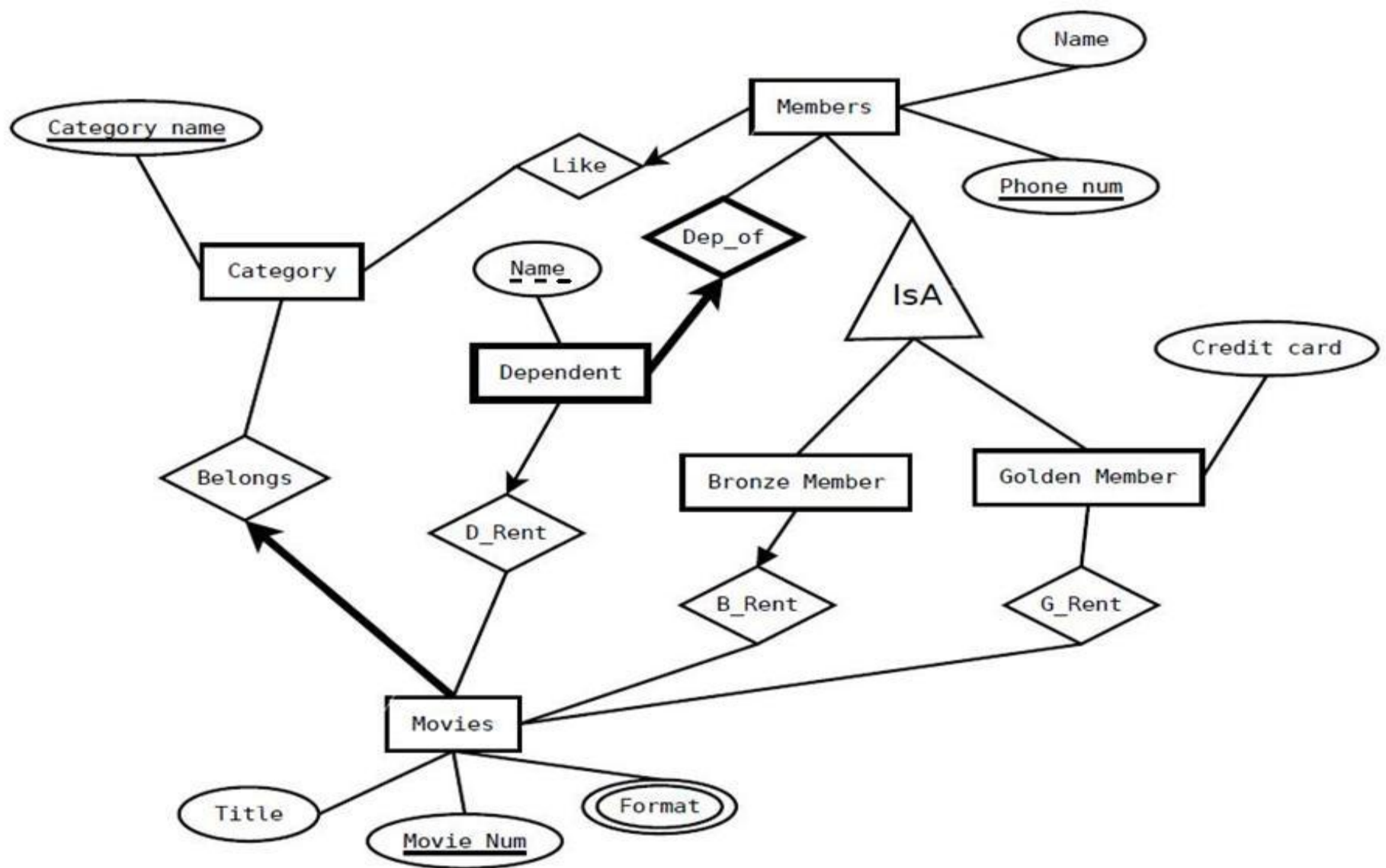


Each dependent is allowed to rent only one movie.

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Now dependents CAN participate in a relationship.



To print your E-R diagram:

- Print to a postscript file (e.g., diagram.ps) in Dia.
Ensure that the diagram fits on one page, first.
- At the Unix command prompt, execute the command:
lpr -P prn219 diagram.ps

For printing or any other lab hardware & software problems contact the Help Desk:

Room: 1-32 CSC

Email: helpdesk@cs.ualberta.ca

Phone: 492-5067

