DBI Lab 003: Entity Relationship Modelling

COMP1048 - Databases and Interfaces

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Lab Overview

In this lab session, you will practice translating problem descriptions into ER diagrams, using the techniques presented in lecture.

> **Note**: Generating ER Diagrams
>
> You are not required to use a specific piece of software for this lab task. We recommend using Microsoft PowerPoint, as it is freely available to you. Please tell us which software you used in your lab submission, if you would prefer to use something else.
>
> If you decide to use pen and paper, please make sure that you use a ruler and that your diagram is well presented. A diagram that is not well-made, messy, or unprofessional might not get a mark for this lab activity.

Exercise 1: Film House

> A film house wants to create a database to store the details of its collections. Information to be stored about each movie includes their price, title, year and genre. Each movie will have a leading actor, and each leading actor may appear in several movies. Actors have names associated with them, and it should be possible to search the database with the actor's name.

Complete the following activities:

1. From the problem description above, identify the entities, attributes, relationships, and cardinality ratios.

> - Entities: Actor, Movie.
> - Attributes: Name, Title, Price, Year, Genre.
> - Relationship: Act(1:M)

2. Create an ER diagram that will represent the film house's data requirements.
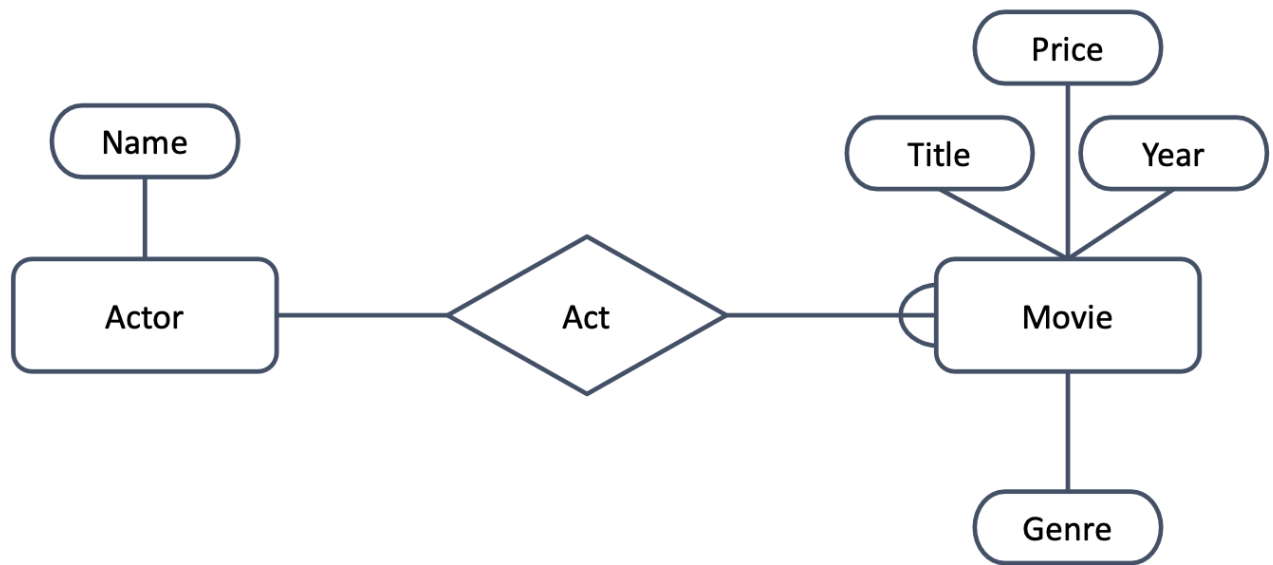
Exercise 2: Drug trials

A research laboratory is running several drug trials on healthy volunteers to check whether drugs have side effects. Each drug has a unique name. Each trial involves exactly one drug and several volunteers (who take the drug and report if they had any side effects). For each volunteer in each trial it needs to be recorded whether the volunteer had any side effects, and if yes, what those side effects were (there could be several side effects experienced by the same person, for example headache, dry mouth, and fever). Each side-effects will have its standard description. For simplicity, we assume that each volunteer takes part in at most one drug trial. Data stored about volunteers is their National Insurance Number (NI), name, age, gender, address and telephone number.

Complete the following activities:

1. From the problem description above, identify the entities, attributes, relationships, and cardinality ratios.

   - Entities: Trial, Drug, Volunteer, Side Effects.
   - Attributes: Drug name, Description, NI, Name, Age, Gender, Address, Telephone.
   - Relationship: Involve(1:1), Involve(1:M), Experiences(M:M).

2. Create an ER diagram that will represent the drug trials' data requirements. Furthermore, make sure that all the M:M and 1:1 relationships have been eliminated (you can introduce new entities if it is necessary)
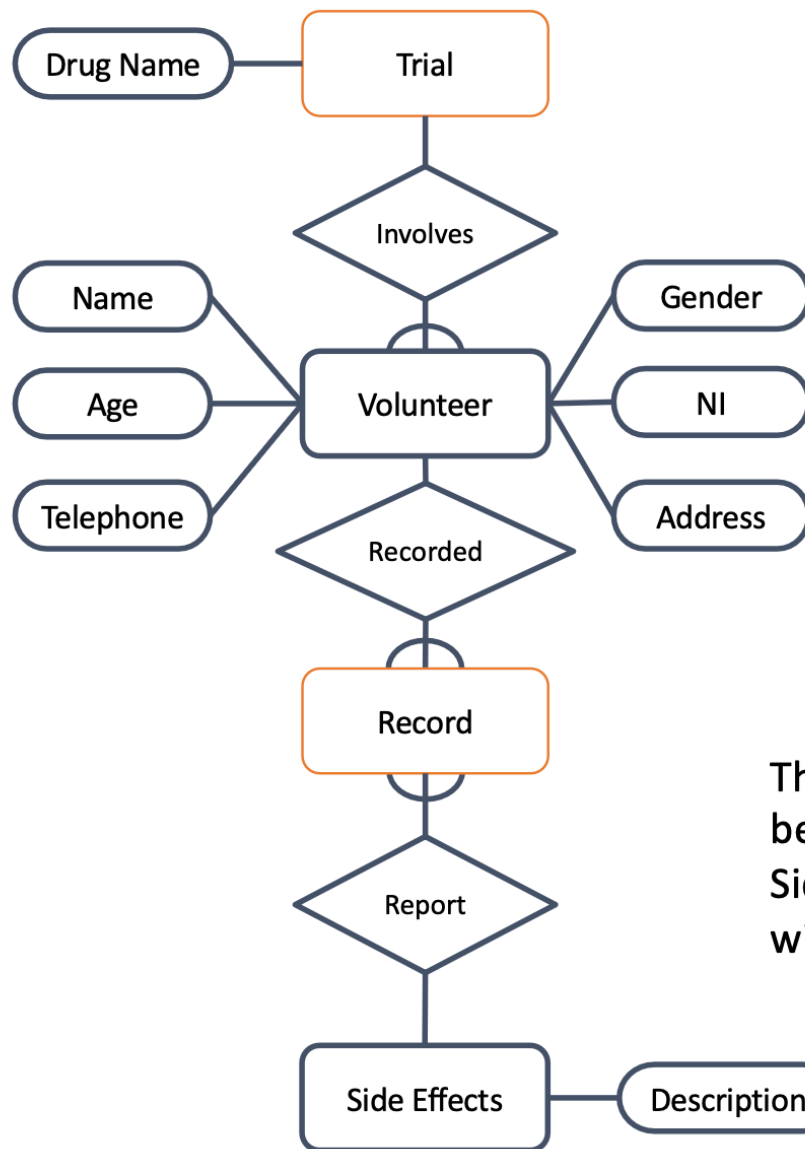
The 1:1 relationship between Trial and Drug is eliminated.

The M:M relationship between Volunteer and Side Effects is replaced with two 1:M relationships.