

# EXERCISE 2: ER TO RELATIONAL MAPPING<sup>\*</sup>

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## 1 Exercise 1

Why is it useful to first do an ER design and then convert this into a relational schema?

## 2 Exercise 2

Convert each of the following ER design fragments into a relational data model expressed as a box-and-arrow diagram:

## 3 Exercise 3

In the mapping from the ER model to the relational model, there are three different ways to map class hierarchies. Show each of them by giving the mapping for the following class hierarchy:

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<sup>\*</sup>Version 1.1: Jul 8, 2009 1:23 am GMT-5

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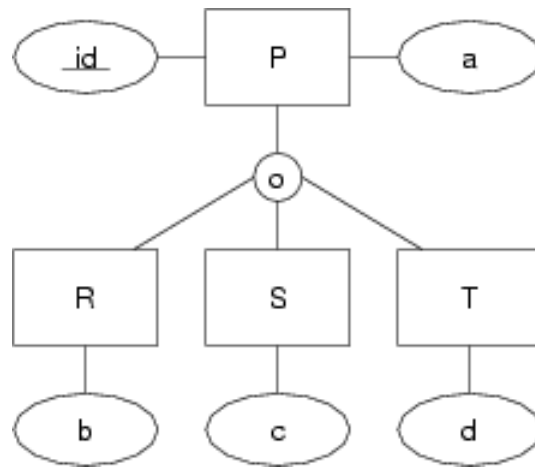


Figure 1

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Use box-and-arrow diagrams for the relational models.

#### 4 Exercise 4

Convert the following entity into relation(s) in the relational data model:

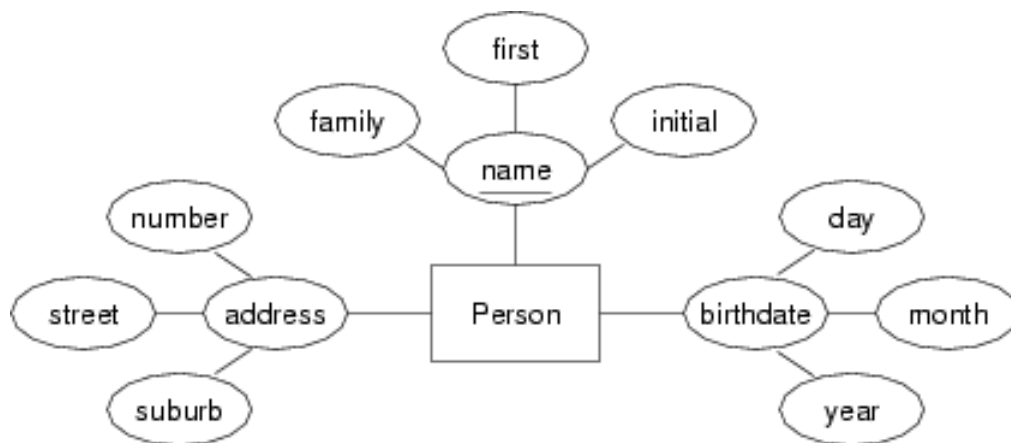


Figure 2

## 5 Exercise 5

Convert the following ER design into relations in a relational data model:

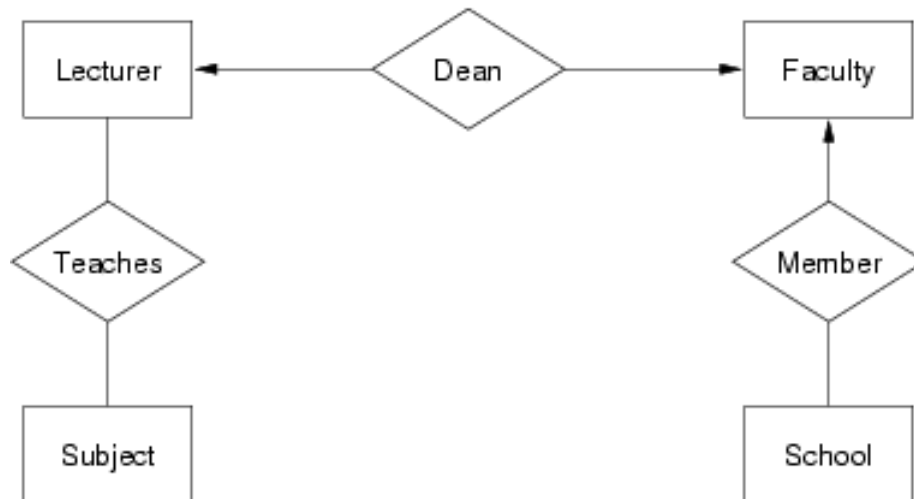


Figure 3

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You can assume that each attributes contains (at least) a suitably-named attribute containing a unique identifying number (e.g. the Lecturer entity contains a LecID attribute).

## 6 Exercise 6

Convert the following ER design into an SQL schema:

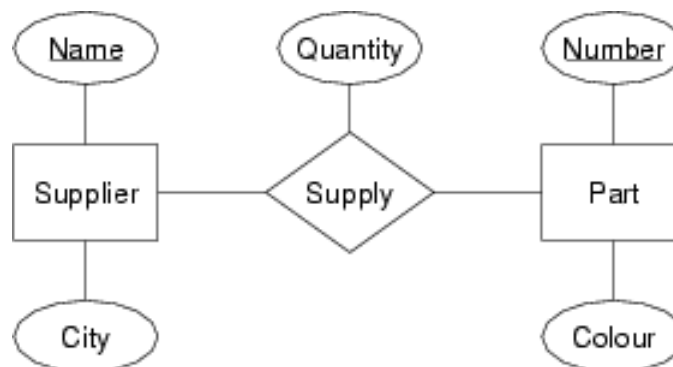


Figure 4

Which elements of the ER design do not appear in the relational version?

## 7 Exercise 7

Convert the following ER design into a relational data model expressed first as a box-and-arrow diagram

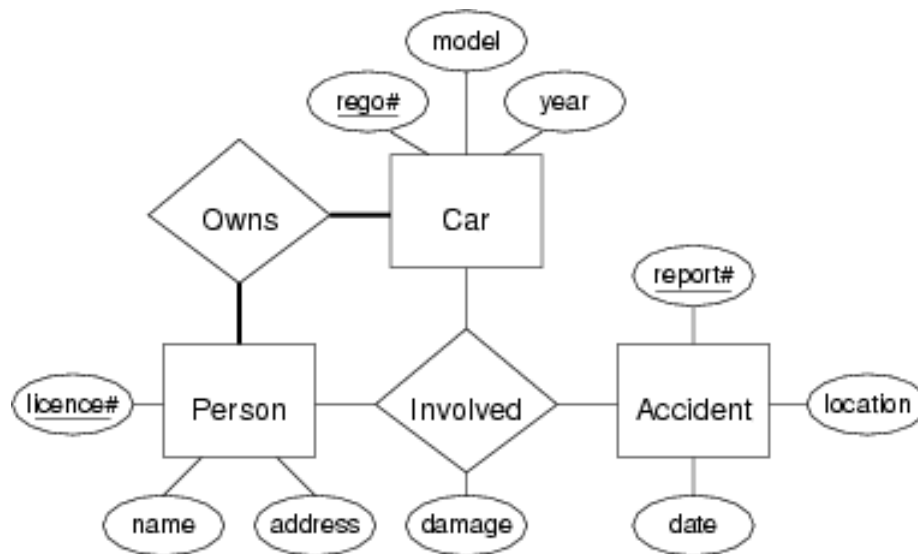


Figure 5

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Which elements of the ER design do not appear in the relational version?

## 8 Exercise 8

Convert the following ER design to relational form:

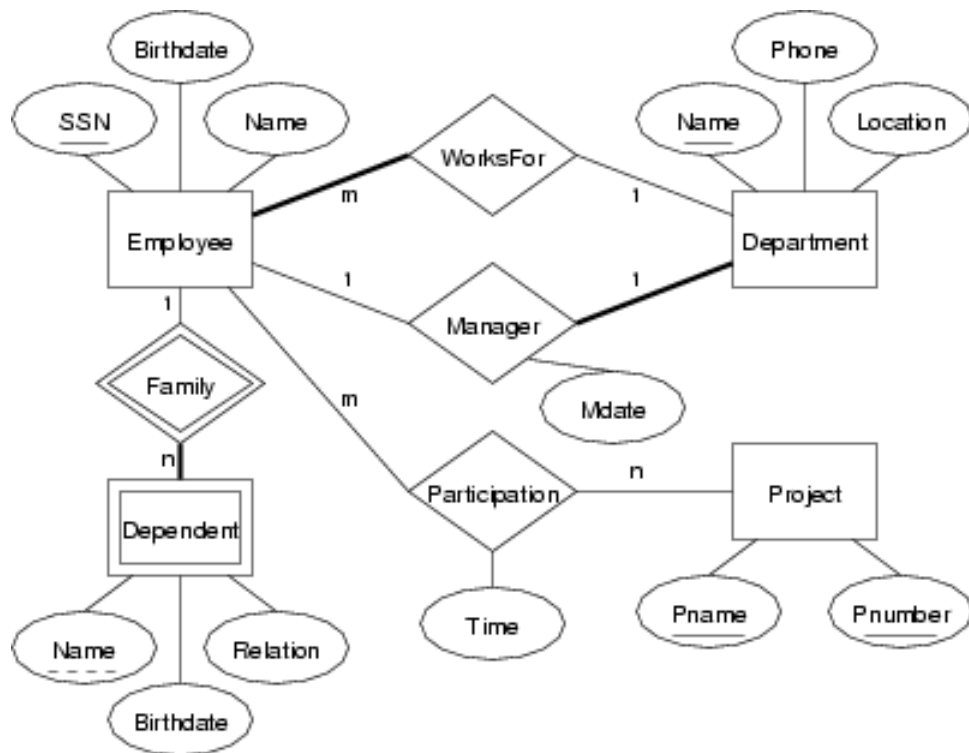


Figure 6

Which elements of the ER design do not appear in the relational version?

## 9 Exercise 9

Using this version of the Person class hierarchy, from the Medical scenario described previously, convert the ER design to relational form as an SQL schema:

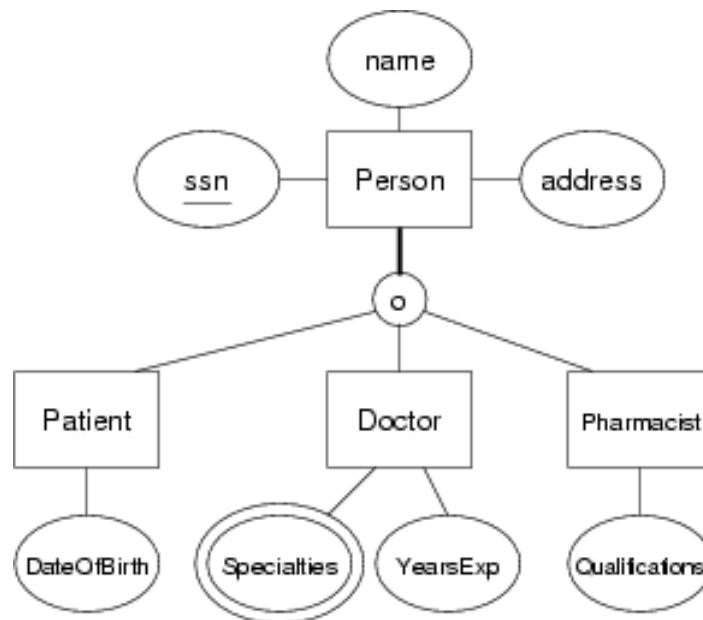


Figure 7

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Give mappings using both the ER style and single-table-with-nulls style.

## 10 Exercise 10

Convert this ER design for the medical scenario into relational form:

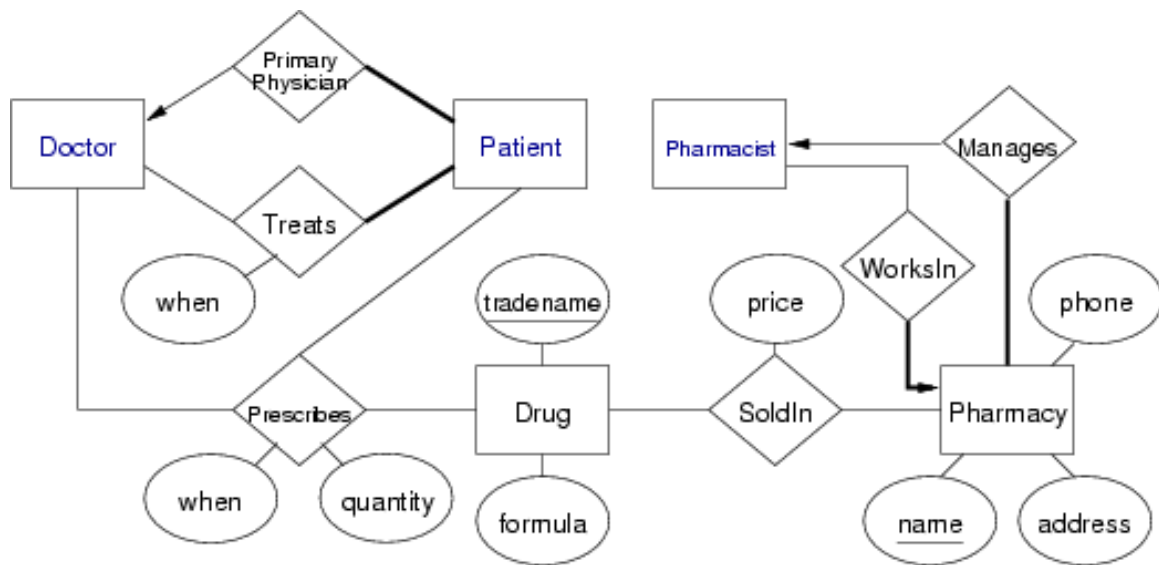


Figure 8

Which elements of the ER design do not appear in the relational version?

## 11 Exercise 11

Convert this ER design for the book publishing scenario into relational data model

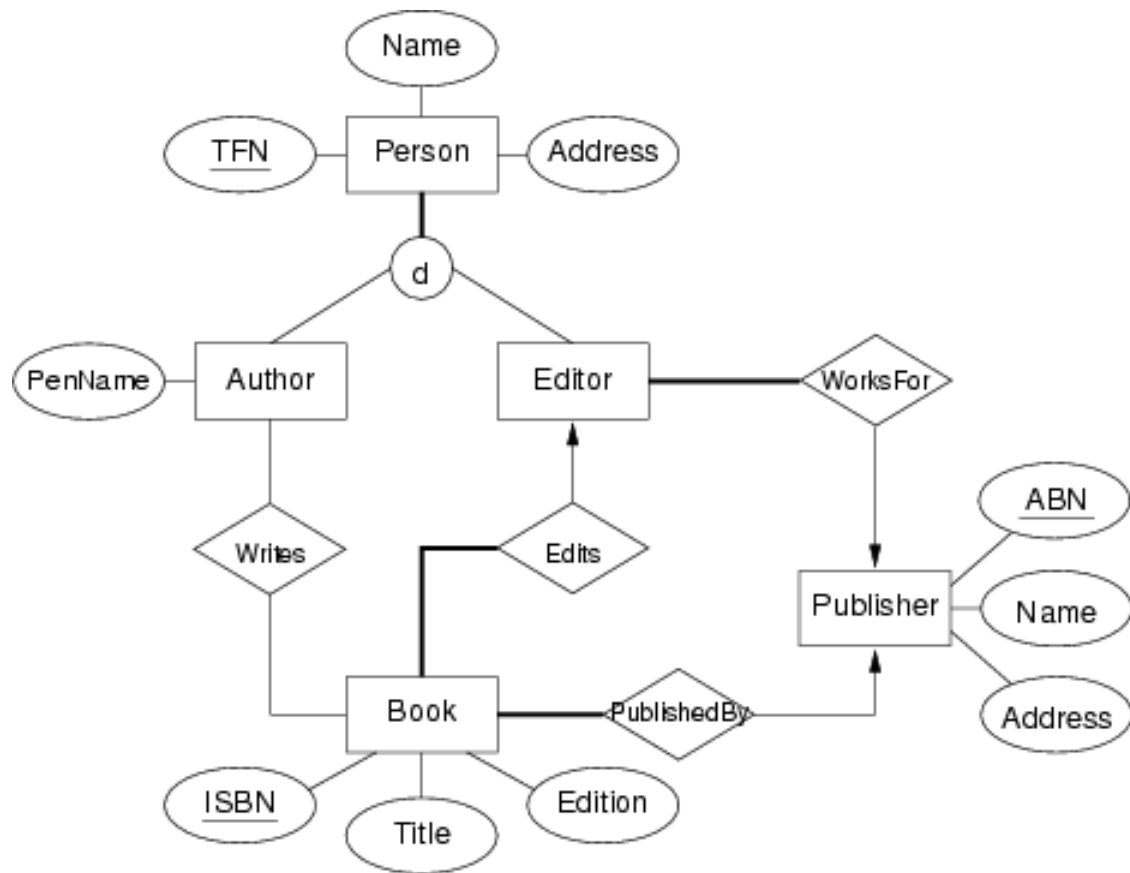


Figure 9