Informatik II, D-BAUG FS 2014

Departement Informatik

ETH Zürich
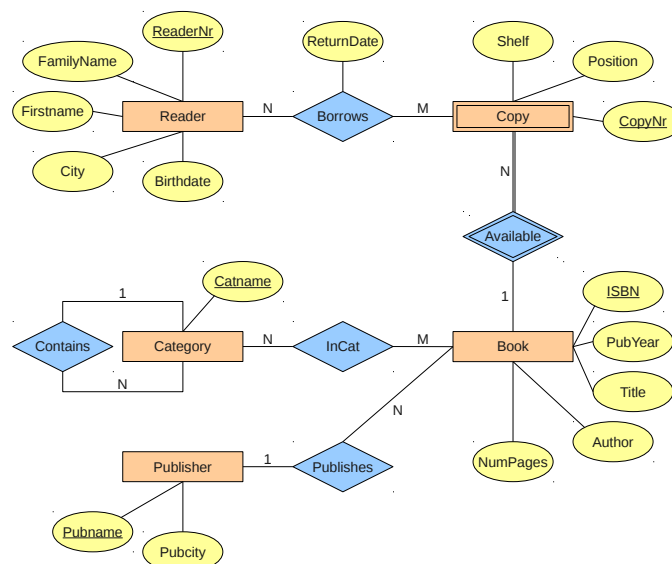
Sheet 11

hand out: 12. Mai 2014

due: 21. Mai 2014

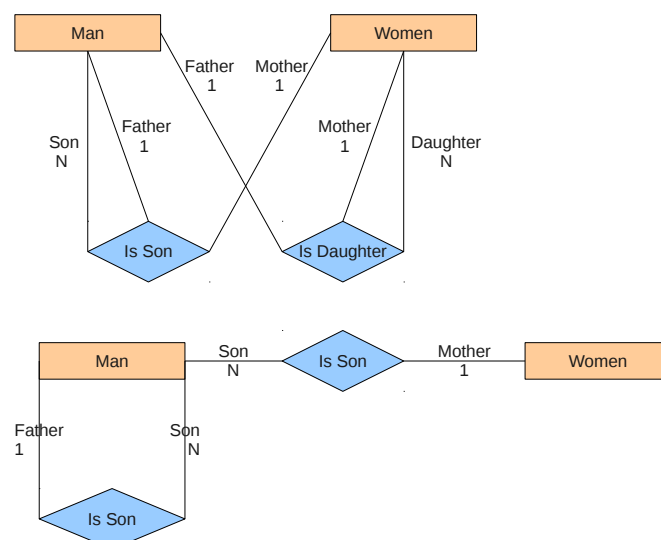# 11 Relational Schema and SQL

11.1 Relational Schema

Convert the following ER diagrams into relational schemas.
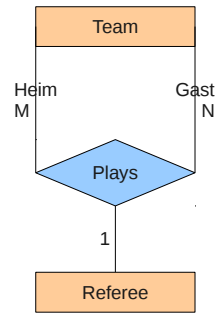
11.1.1 Library System

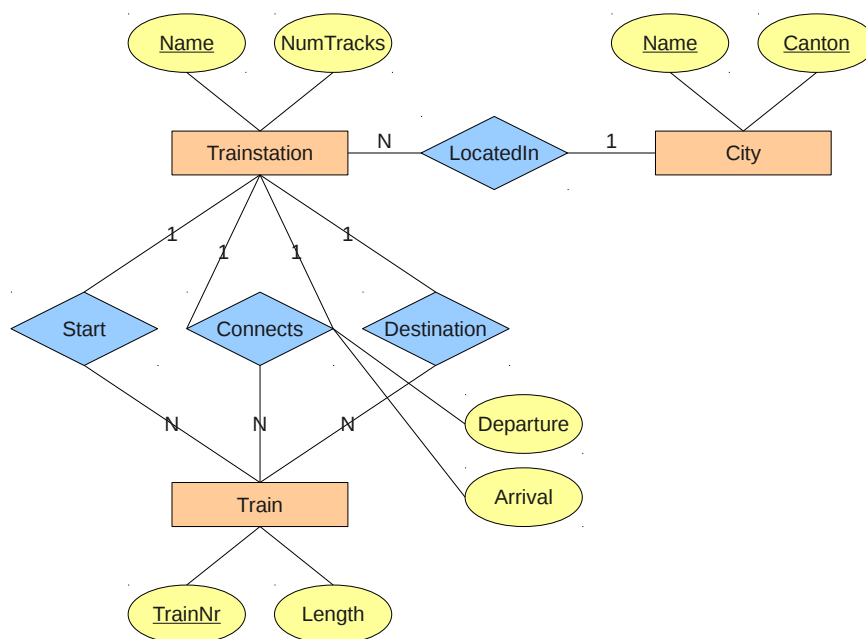Create a relational schema for the ER diagram of the previous exercise sheet.

11.1.2 Inheritance

11.1.3 Football

11.1.4 Trains

11.2 Relationale Algebra

Reader (<u>RDNR</u>, Surname, Firstname, City, Birthdate)
Book (<u>ISBN</u>, Title, Author, NoPages, PubYear, PublisherName)
Publisher (<u>PublisherName</u>, PublisherCity)
Copy (<u>ISBN</u>, <u>CopyNumber</u>, Shelf, Position)
Loan (<u>ReaderNr</u>, <u>ISBN</u>, <u>Copy</u>, ReturnDate)
BookCategory (<u>ISBN</u>, <u>CategoryName</u>)

Formulate the following queries in relational algebra:

a) Which are the last names of the readers in Zurich?

b) Which books (Author, Title) are from publishers in Zurich, Bern or New York?

c) Which books (Author, Title) has the reader Lemmi Schmöker borrowed?

d) Which books in the category "Alps" do not belong to the category "Switzerland"?

e) Which readers (Surname, Firstname) have borrowed books that were published in their home town?

f) Which readers (Surname, Firstname) have borrowed at least a book that has been borrowed also by the reader Lemmi Schmöker (the reader Lemmi Schmöker should not be included in the results)?

11.3 Queries in SQL

Formulate the queries of exercise 11.2 in SQL.

11.4 SQL Updates

Formulate the following updates of the database with a schema according to Exercise 10.3.2 in SQL:
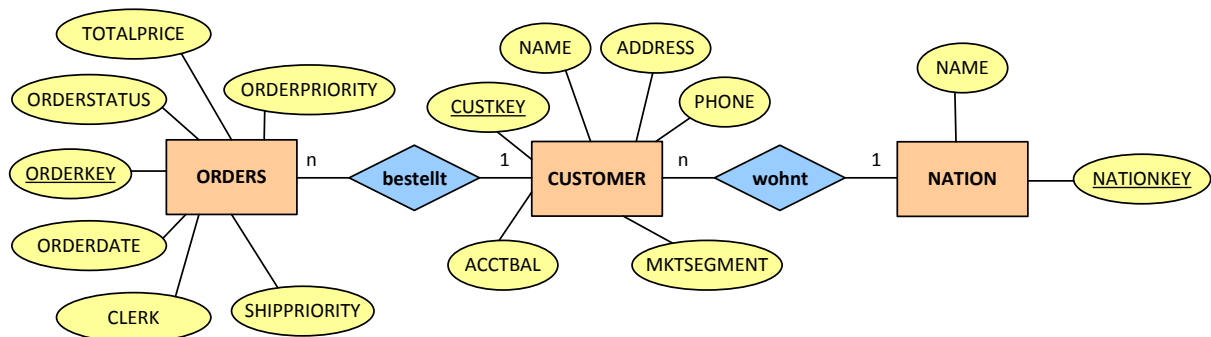
a) Insert a new nation with name "Switzerland".

b) Delete all orders with totalprice smaller than 100.

c) Change the status (orderstatus) of the order with the number (orderkey) 4 from "O" to "F".

Test your queries using PhpMyAdmin (see Exercise 10.3) and verify the result.