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# Introduction to Databases

# Autumn 2023

## Exercise 3

**(Practical)** Hand-in: 03.11.2023 (during Exercise)

**(Theory)** Hand-in: 05.11.2023 (ADAM, 23:59)

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**Solving the Exercises:** The exercises can be solved in small groups of a maximum of two people. Use the notations introduced in the lecture. The DMI plagiarism guidelines apply for this lecture.

**Submission Information:** Please upload all deliverables BEFORE the deadline to ADAM as a **single PDF** using the team hand-in feature. Solutions that are handed in too late cannot be considered. For practical exercises upload the deliverables to ADAM and present them to one of the assistants/tutors during the exercises, both is required to receive the points!

## Task **(Practical)** 1: Visualizing the Schema (2 points)

In this task you will load another dump of the same dataset as in the previous exercises. But in contrast to the last one, this dump contains more information about the games (split over multiple tables), but it covers a smaller time frame. Your task is to visualize the schema using your chosen tool and derive the relational schema from it.

The new dump: <https://drive.switch.ch/index.php/s/NGBh5TNWWPSYiPp/download>

After importing the dump, **compute the number of all games**, similar to the last exercise. If you want to delete the table from the previous exercises (optional, just to free space), execute the SQL command “`DROP TABLE simple_games;`”. Find the visual representation of the schema in your chosen UI tool and create the relational schema with its help. Take extra care to correctly annotate the primary and foreign keys.

**Hand-In:** Show the total game count and your relational schema to one of the assistants/tutors.

## Task (Theory) 2: From an ER diagram to a Relational Schema

(5 points)

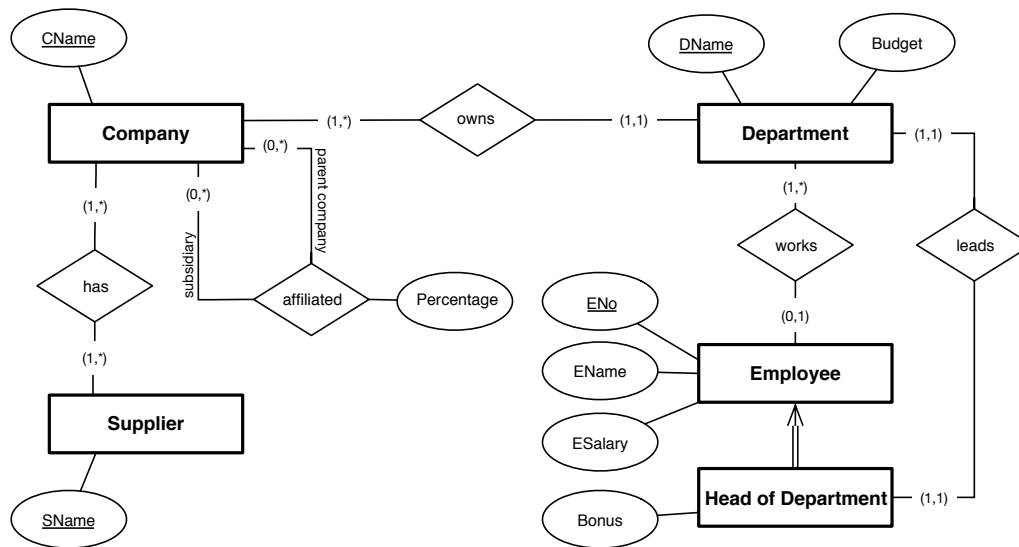


Figure 1: ER diagram

Consider the entity-relationship (ER) diagram depicted in Figure 1. Transform the diagram into a relational model and write down the relational schema. Merge all relations wherever meaningful and possible. Denote all primary and foreign keys.

**Hand-In:** Upload your relational schema to ADAM.

## Task (Theory) 3: Extend an ER diagram

(3 points)

Extend the ER diagram and the relational schema by the fact that an employee is sitting in an office which is located in a specific building. Model this circumstance as precisely as possible.

**Hand-In:** Upload your adjustments to the ER and the relational schema to ADAM.