Exercise Sheet 4: Schema Integration (until Thursday, 16.11.2017) –25 Points

Please note: you need **50%** of all exercise points to receive the *Studienleistung* for this lecture. In order to pass the RDB I Module, you need both the Studienleistung **and** you need to pass the exam. Exercises have to be turned in until **Thursday before the lecture** either in the lecture hall or into our mailbox (Informatikzentrum 2nd floor). Please do not forget your **Matrikelnummer** and your **tutorial group number** on your solutions. Your solutions may be in German or English. Unless otherwise specified: **Always use your own words!**

Exercise 4.1 – (10 Points)

1. Create an EER model for each of the following mini world's descriptions. Insert suitable keys in your design (5 points)

Miniworld A. Deep ACME is interested in a database design to store information regarding employees, projects and teams within the company. There are two types of employees: project leaders and staff employees. A project leader leads one team of staff employees. Each team should have at least three staff members. Teams are assigned to one and up to ten different projects. Several teams can work on the same project. For the projects Deep ACME is interested in storing the name of the project, the date the project began and the duration of the project in years. For employees, Deep ACME wants to store names, addresses, and birthdays. For project leaders the years of experience as project leaders.

Miniworld B. Deep ACME wants another database design to store information about the projects and project leaders. Project leaders are responsible for projects. A project can be a long term project when the duration of the project is greater than five years or short term projects otherwise. Depending on the project, a project leader can be assigned one of two different resources: cloud computing or a self-driving car prototype. For cloud computing resources the company is interested in storing the name and the email of provider of the cloud computing platform. For self-driving cars Deep ACME wants to store the model and the version of the firmware of the car.

2. Integrate both models into a common one. Please explain your solution and design decisions (5 points)
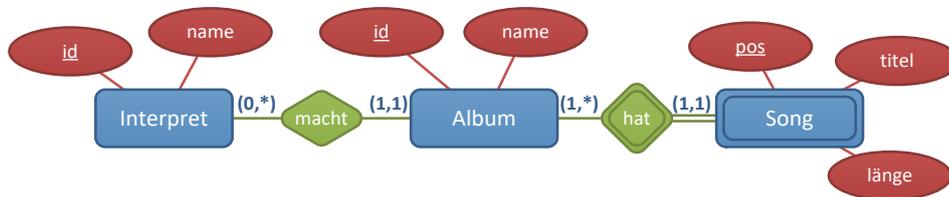
Exercise 4.2 – (5 Points)

Given are two diagrams for modeling a music database. Diagram (1) focuses on band music and the career of the musicians, while Diagram (2) aims at the mapping of albums.

(1)

(2)
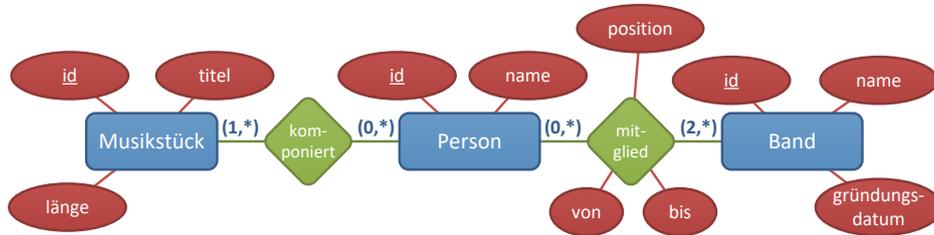
Integrate both models into a common one.

Exercise 4.3 – (10 Points)

1. Create an EER model for each of the following mini world's descriptions. Insert suitable keys in your design (5 points)

Miniworld A. ACIDoole wants a database design to keep track of the updates to the software that makes the company's self-driving cars work. Developers make updates to the software. Each update has a description and an associated cost. The associated cost consist of the number of programming hours and the number of modules that were updated. Each update is unique within the self-driving car that has been updated. For each self-driving car ACIDoole wants to store the model number and the manufacture year. ACIDoole also wants to store the name and the address of the developers.

Miniworld B. ACIDoole wants a database design that deals with another aspect of the company: the selling of the self-driving cars. Employees that sell self-driving cars receive a commission. ACIDoole wants to store the specific date of the sale of a self-driving car. For salesmen, the following information must be stored: names, ages, and addresses. We also want to store the following information when a client buys a self-driving car: the date and the price. Emails, names and phone number of the clients must also be stored.

2. Integrate both models into a common one. Please explain your solution and design decisions (5 points)