Exercise Sheet 2: Data Modeling (until Thursday 10.11.2011)

Please note that you need **50%** of all exercise points to receive the "Studienleistung". Exercises have to be turned in until **Thursday** of each respective week and must be completed in teams of two students each. You may hand in your solutions either on paper **before the lecture** or into the mailbox at the IFIS floor (Mühlenpfordtstraße 23, 2nd floor). Please do not forget your "Matrikelnummer" and your tutorial group number on your solutions. Your solutions may be in German or English. Please note: To pass the "RDB 1 Modul" you need the exercise points and the exam!

Exercise 2.1 (8 points)

Please explain in your own words:

a) Explain the different layers of the three-layer-architecture. (6 points)
b) Briefly explain the concepts of physical – and logical data independence. (2 points)

Exercise 2.2 (5 points)

Please explain in your own words:

a) What is the difference between an entity and an entity type? Please give an example. (1 point)
b) What is a derived attribute? Please give an example. (1 point)
c) How does a derived attribute affect redundancy? (1 point)
d) Why do we need key attributes? Are there also entity types without key attributes? (2 points)

Exercise 2.3 (3 points)

Draw a Chen ER-Diagram for the following entity type:

Student = (matno, name, (address(street, no, zip, city)), {telephone(prefno, no)})

Exercise 2.4 (5 points)

Create an ER diagram (Chen) for the following scenario:

You are organizing different types of events. An event is identified by a unique number and has a name. It takes place at a specific location on a fixed date. Each location is identified by a name. Furthermore, each location has a number of available seats. Each seat has a seat number. Of course, if you have two different locations, both can have a seat with number 1. Moreover, each event takes place at exactly one location and at each location several different events can take place.