

## Exercises for DW & DM

### Sheet I (by 06.11.2012)

Please drop your solution in the silver homework box (second floor where the IfIS is located) by Tuesday, before the lecture (date is also mentioned above). If you are an ITIS student from outside Braunschweig, you may send your solutions per email to [silviu@ifis.cs.tu-bs.de](mailto:silviu@ifis.cs.tu-bs.de). You may answer in either German or English. **You are encouraged to work in teams of 2 students** (not more than 2), and send your solution as a team. Please mention in your email the **name of both students** together with the corresponding **inmatriculation numbers**.

#### Exercise 1 (2P)

Only for non-ITIS students: Please log in to our Homework Management System (HMS) at <https://www.ifis.cs.tu-bs.de:8443/hms/> using your y-number and password and sign in for this lecture. This will make grading and managing your homework easier for both of us. (Some of you have already been added to the lecture, so please check the accuracy of the information).

#### Exercise 2 (4P)

1. What is the difference between Data Warehouses and large databases? (1P)
2. Explain the following notions:
  - a. Operational data (1P)
  - b. OLTP (1P)
  - c. OLAP (1P)

#### Exercise 2 (4P)

1. Give an example of a typical questions DW are built for. (1P)
2. Can we have just one system for both operational and analytical tasks? (Why don't OLTP and OLAP mix well)? (2P)
3. How and why is the DW lifecycle different from normal ones? (1P)

### Exercise 3 (6P)

1. You are a business technology consultant with KPMG and you have just been contracted by Adidas. The Adidas CTO calls you and tells you that because of the financial crisis they need to cut costs and raise profitability. They would like to know how their sales are doing, by shops, regions and product categories, this year compared to last year (and they have prepared a list of such questions they would like the system to be capable of on a regular basis). They have an IBM DB2 DBMS server where all the operations are registered in real-time, storing the last 6 months data, and when they tested it for such purposes it didn't go that well. The rest of the data until 5 years ago is stored on magnetic band in an old nuclear bunker.
  - a. How would you catalogue the system they have? What is it? Is it a DW? (1P)
  - b. Why is the system they have not fit for such queries? (1P)
  - c. What would you suggest they do? What (if any) should they buy (HW and SW)? How much does that cost (just approximate)? (2P)
  - d. Recently they have conducted a marketing campaign for Europe and USA for "running shoes". Could you tell, with the system you bought at (3) if the campaign was successful or not? What would be the questions the system should answer to obtain this information? (2P)

### Exercise 4 (2P)

The Lufthansa sales department decided to have a sales data mart built for them by the company you work for. You have been assigned by your company to design such a data mart. During requirements analysis discussions with Lufthansa sales department personnel, you found out that they are mainly interested in the evolution of sales volume, for different categories of tickets, by geographical regions. You have to design a conceptual model, and represent it in mE/R for the second meeting with the client. Describe briefly in words all elements in your model. (Explain your choices for measures, dimensions and granularities.) (2P)