OLAP and Data Warehousing - Exercises

Exercise 1. Design the data warehouse for a wholesale furniture company. The data warehouse has to allow analyzing the company's sales **at least** with respect to the furniture, customers and time. Moreover, the company needs to analyze the furniture sales with respect to its type (chair, table, wardrobe, cabinet...), category (kitchen, living room, bedroom, bathroom, office...) and material (wood, marble...); customer purchases with respect to their spatial location, by considering at least cities, regions and states. There are also discounts for certain furniture, at different times of the year. The company is interested in learning at least the quantity, amount, and discount of its sales, and also the net revenue obtained from the sales. We ask you:

1. Draw the MultiDim diagram for the problem above.
2. Design a star **and** a snowflake schema for the conceptual design in (1)
3. Consider now that customers can move to a different city, and we want to keep track of this, that is, to be able to determine the city where a customer lived at the time of the sale. Modify the star schema obtained in (2) to account for this.
4. Create the corresponding physical database (for one of the two choices, star or snowflake), and populate it with some data.

Exercise 2. A university wants to increase by a 10% per year the number of students passing exams in the different courses. For this, and based on operational data, the university decided to build a data warehouse. You must:

1. Define at least three sub-goals associated with this goal
2. Define at least three indicators that can help to monitor the evolution of the accomplishment of the goals
3. From (1) and (2) define possible facts and dimensions
4. From (3), sketch a draft of a MultiDim diagram
5. Define a star and a snowflake schema for the conceptual schema in (4).
6. Create the corresponding physical database (for one of the two choices, star or snowflake), and populate it with some data.