

# Database Design II

## 1. *Mandatory* exercise:

An advertising agency wishes to design a database to manage its activities.

- The advertising agency has several offices. Each office is identified by a unique code and characterized by the city in which it is located, the address and the phone number.
  - The people working for the advertising agency are characterized by their social security number (SSN), name, date of birth and educational qualification, if any. People are divided into designers and managers. For each designer, the address of his/her personal website and the office where he/she is currently working are known. For each manager, we want to keep track of the offices for which he/she has been responsible in each time interval (e.g., from January 1, 2009 to December 31, 2010). Please note that each manager may be responsible for several offices in the same time interval, and that he/she may be responsible for the same office in different time intervals. In addition, there may be more than one manager responsible for the same office in a given time interval.
  - The clients of the advertising agency are identified by their vat number and characterized by the corporate name and the phone number. The advertising agency designs advertising campaigns for its clients. Each advertising campaign is characterized by a unique identification code, the budget and the list of the media involved in the campaign (e.g., advertising posters, TV commercials and banner ads). For each campaign, the designers that designed it and the client for whom it was designed are known.
  - Every year, each office of the advertising agency assembles a dvd presenting the best advertising campaigns designed by that office during the year. Each dvd is uniquely identified by the office assembling it and the year to which it refers. For each dvd the title, the duration and the advertising campaigns presented in the dvd are known.
  - The advertising agency periodically arranges some meetings. For each meeting, we want to record the participating manager and the participating client, the date, the start time and the end time of the meeting, and the office of the advertising agency where the meeting is held. Please consider that the same manager may participate in several meetings, with the same client or with different clients, but he/she may not participate in two or more meetings at the same time.
- (a) (9 points) Describe the conceptual schema of a database for the above application by means of an ER diagram.
- (b) (4 points) Derive a normalized relational logical schema for the same database.