Introduction to Databases

Homework no. 3: Database design

A bank wishes to design a database to manage some activities of its Italian branches.

- The bank has a variety of branches throughout the Italian area. Each branch is identified by a code and it is characterized by the name, the address and the telephone number. The bank's customers are characterized by Social Security Number (SSN), full name (name and surname), date of birth, address and email. For each customer the database stores the list of branches in which he/she has at least a bank account. Each customer may have different bank accounts in the same branch and/or different bank accounts in different branches.
- Each area manager is identified by an alphanumeric code and he/she is characterized by name, email, phone number and mobile phone number (if available). For each area manager the title of the highest obtained degree and the date when he/she received that title are also known.
- Each branch organizes some meetings periodically. Each meeting is identified by a code and it is characterized by the branch at which it takes place, the meeting date and time, and list of addressed topics. The meetings are classified as ordinary and extraordinary meetings. For extraordinary meetings the motivation for which the meeting was called is stored. A report is written at the end of each meeting. Each report is identified by a code and it is characterized by the meeting for which it was written, a brief description and the meeting duration.
- The cleaning of the branch premises is carried out in specific days of the week. For each branch the database stores the days of the week on which the cleaning activity takes place and the corresponding time slot (i.e., start hour and end hour).
- Each branch manages different savings plan. Each savings plan is identified by a code that is unique within *all* savings plan referring to the same branch and it is characterized by the subscribing customer and a brief description. Each savings plan is associated with a set of deposits. Each deposit is identified by a code unique within the corresponding savings plan and it is characterized by the due date of payment and the corresponding amount.
- For each branch the database stores the list of its area manager over time with the corresponding period of time (start and end date). Please note that a branch can not have more than one area manager at a time, while each area manager can manage more branches in the same time period.

1. Describe the conceptual schema of a database for the above application by means of an ER diagram.
2. Derive a normalized relational logical schema for the same database.
3. Define referential integrity constraints for 3 relations of your choice among those defined in the conceptual schema.