Introduction to Databases

Homework no. 3: Database design

A comic book publisher wishes to design a database to manage some of its activities.

- The publishing house publishes a variety of comic books. Each comic book is identified by a code and it is characterized by name and periodicity (e.g., weekly, monthly). The comic book is composed of a series of comic stories. Each story, identified by a progressive number that is unique within all stories referring to the same book, is characterized by title and graphic style (in color or in black and white) and name of the cartoonist who drew up it. Stories can be classified as stories with single or multiple episodes. For multiple-episode stories the number of episodes they consist of is stored. For single-episode stories the number of drawings in boxes is stored.

- Each story is associated with one or more characters (e.g., Mickey Mouse, Lucky Luke). Each character is characterized by (unique) name, list of abilities, and name and surname of the cartoonist. The same character can be associated with many stories.

- Stories are reviewed by one or more reviewers. Each reviewer is identified by Social Security Number (SSN) and is characterized by name, surname, e-mail (if available) and a short curriculum vitae. The database keeps track of the date on which each reviewer receives each story (start date) and, if known, the date on which he returns it (end date). Consider that a reviewer may receive many stories to review over the same time frame and the same reviewer may review the same story in different time frames (e.g., if the cartoonist who drew up the first draft made changes).

- Comic books can be associated with gifts. Each gift, identified by an alphanumeric code, is characterized by name and description. For each gift the database stores the list of comic books to which it has been associated with and its distribution time frame (start and end date). Please note that the same gift can be associated with the same comic book many times, or with different comic books in different time frames. However, the same gift cannot be associated with more than a comic book at the same time.

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.