Lab 1

Operational Database

Context

A movie rental company has stores in USA and abroad. To obtain a card allowing to rent movies, customers must fill out a form mentioning their first name, last name, date of birth, phone number, gender (male/ female), email and address (street, district, city, state, country).

When a customer wants to rent a movie, he/she can go to an automatic machine, select the movie(s) he/she wants to rent. Each machine has a kind, an address (street, district, city, state, country). When the customer chooses to show the detail information of a movie, he/she can view some information such as title, category, release year, duration, ranking, producer, director, country, a price per day and the number of DVDs available in the machine. DVDs of a same movie have different codes for keep tracking. The price per day of a movie is the same in all machines. The customers can rent several DVDs of a same movie or different movies at the same time. In the case that he/she rented several DVDs, the customer can bring back his DVDs at different dates. However, all DVDs/movies rented at the same time will have the same rental number in the system. Note that a movie could be available in different automatic machines. For simplifying, we assume that a movie is classified to only one category. A customer rents a DVD from a machine could bring it back to another machine.

The rental price of a movie is given per day, it means that if for example a customer rents a film on November 27, 2012 and brings it back on the same day, he must pay the amount of the rental for a day. If he brings it back on 28 November (whatever the time), he must pay twice the amount of the rental per day, etc. This is not very realistic, but it saves us from having to consider the hours of rental and return, which would complicate the task of this first lab.

The customer pays for his rentals when he brings back the movies. For example, A customer borrows two movies “Gone with the wind” and “The imitation game” on January 10. If he brings back the movie “Gone with the wind” on January 11 and the film “The imitation game” on January 12, he must pay twice the unit price of the movie “Gone with the wind” on January 11 and three times the unit price of the movie “The imitation game” on January 12. Note that the unit price of the movie could be changed by time, but the price that customer must pay when he/she returns the movie is the price on the rental date. Note that the customer could return at the same time the movies rented in different times.

Now, let’s look at the operational database that is used to bill the customer. The purpose of the operational database is therefore to calculate, for each rented DVD, the amount that each customer should pay. As soon as a customer brings back the movies and pays for the rental, the machine will print a receipt mentioning the rental number, the rental date, the return date, the rented DVD, the unit price and the amount of each DVD as well as the total amount that he/she must pay.

Question : give the database diagram of the operational database of the system.