CSCI 585- Database Systems

Fall 2014

Homework Assignment 1

Project Description

The goal of this assignment is to

1) Design a conceptual schema using the (E) ER Data model,

2) incorporate this schema into an OR-DBMS,

3) Run queries on this database.

Part I: Extended ER data model (50 points)

Design a schema that incorporates the specification described below as efficiently as possible.

You should submit a written diagram of your schema design using the notation given in the class. In this diagram, indicate all the classes, subclasses, relationships (weak & strong), relationship cardinalities and degrees, total participations, attributes, and primary keys. In addition, specify whether each attribute is single-valued or multi-valued, stored or derived, and atomic or composite. In your design, you can make and state reasonable assumptions if they are not specified in the specification.

Design Specification

Design the database system for a vacation rental website. It should store and manage the following information. In case of ambiguous parts, make a valid assumption based on a real system and write it down in your submitted work.

Villa:
Each villa has a name, unique id, a picture, construction year, age, and some features (From the list: swimming pool, Jacuzzi, billiard table, board games, pets allowed). A villa is rented for a price that may vary from night to night.

User:
A user can subscribe to the website and rent villas. He has a first and last name, unique id, email address, and DoB. A user has a list of favorite villas associated with it. He can decide later whether he wants to reserve them or not. When renting a villa, the user declares the start and

end-date for the reservation. The user enters the villa in the start date, and leaves it by the noon of end-date so another customer can come in. For completing the online reservation, a user has to make a non-refundable deposit of 50% of the final calculated price. The user needs to pay the remaining amount to the villa owner upon entry.

Review:
A user can also write reviews on villas s/he rented before. A review contains a rating (1-5), and some text describing the user's experience during his/her stay. Regardless of their rating value, reviews can be *liked* by other users. A top review for a villa is the review that has been liked more than any other review for the same villa.

Owner:
Owner is a user who owns one or more villas. He has an associated cell-phone number. Like any other user, he can reserve villas. He can add or delete villas from his set of owned villas. For logging purposes, the date of any such modification has to be recorded in the system. An owner can define new features and add them to the feature list of a villa.
An owner sets rental rate per night of stay for different time periods (defined by start and end dates).

Coupon:
An owner can define coupons for any of his villas. A coupon has a discount percentage as well as a code. Once a user applies the code to the proper villa, he would get a discount on the total rental price. The user would then pay the deposit.

Manager:
A manager is a user who potentially owns villas (like other owners), and can manage (add or delete) other owners to/from the system. A manager can contact an owner using his/her number. S/he periodically inspects villas owned by his managees for quality purposes and records comments and date of visit in the database. A manager himself can be managed by another manager except the CEO (head manager) who does not have any associated user managing him.

Submission Guidelines

1. You are REQUIRED to submit a pdf (part1) to D2L. It should also include your reasonable assumptions.

2. Late submission is not accepted for this homework.