MSDS 7330 : Term Project

Enhancing the Sakila Database

Introduction

We will use the sakila database for the final term project. Sakila (https://dev.mysql.com/doc/sakila/en/sakila-structure.html) is a default database that comes packaged with MySQL. The database holds the data model for a fictitious movie rental company. The following are some key relations contained in the database

- Product Data : The movies/film media files are the products being rented. Each film is described by the content (film category, title, film text etc) , cost of rental and duration.
- Customer , Store Data : includes the customer ,store information , address , payment information
- Rental Information : Rental history of the customers, the film media file rented, the duration rented

Given this context, your team is hired to implement the following system enhancements:

Enhancement Request 1:

The company would like to introduce a 'Reservation System'. Ie, the customers will be able to reserve the films they would like to watch. The following broad requirements should be supported

- Each customer should be able to make reservation on one or more movies they would like to watch
- The customers will be able to specify an 'expiration date' on the reservations. Ie beyond the date, they are no longer interested renting that particular film
- The reservations will be active till
    - the expiration date is passed or
    - customer rents the desired film

1. Provide a design of you db changes with a narrative explaining the changes
2. Implement the change in sakila database
3. Populate the updated fields/tables with a handful of dummy records (5 sample records would suffice)
4. Assumptions on other dependencies aka client application, web app required to support etc

Enhancement Request 2:

The company would like to build a movie recommendation system to recommend movies to the customers. While there are several involved methods to build recommender systems, for this first version they would like to base recommendations on each customers historical rental patterns.

For Example :
Customer1 rented Die Hard 1, Die Hard 2 , Frozen 1, Hangover 1 in the past. You would create a Probability Distribution of his/her preferences to the categories.

P(category = Action|Customer1) = .5
P(category = ChildrensMovie|Customer1) = .25
P(category = Comedy|Customer1) = .25

Your task is to

- create a table/view which has these probability distributions for each customer.
- Under each category, list the top 3 most popular movies.
- Pick 3 random customers and produce 5 movie recommendations for each customer.
  Note: You are free to use any tool/scripting language outside SQL for any support tasks such as transposing , realignment operations etc.

Enhancement Request 3:

There is some additional unused budget the company wants to exhaust this year. They have asked your team to play the role of a product manager and recommend another enhancement. Your task is to

- Define another meaningful enhancement and implement the same.
- The enhancement may involve data model changes or validating a hypothesis using statistical tests.

Deliverables & Timelines

- This can be executed as a group project. This class will have groups of Max Size of 4 members
- Project Design : Due Apr 4th In class - **50 pts**
  - Each group will present their design approach to the class on Apr 4th .
  - The presentation will outline for each requirement
    - Design options considered, with their pros and cons
    - Technical design elements
    - Assumptions
    - A slide or two for each enhancement request outlining how the functionality could manifest on a web application.
- Project Build/Demo : Due Apr 11th in Class + Submit on 2DS – **50 pts**
  - Each group will demonstrate the final work product along with the relevant scripts, ER model etc