

# Group Project

For this project, you will work in groups to develop a video-on-demand application. The groups are assigned randomly and will be visible on Blackboard in time. Your application will use the IMDB dataset (from HW1) to retrieve information on movies. During the project, you will learn aspects of database design and transaction management.

Recall that this is a group project; every member of the group will be asked to individually submit an assessment of everyone's contribution to the group at the end of the semester.

## Part 1 (P1): Database design

Our objective is to understand how to assess the requirements of a specific application, and implement them in your schema. You will also practice complex SQL queries.

### Database schema

You've just signed a contract with a content provider that has videos of all the movies in the IMDB database, and you will resell this content to your customers. Once you open for business, your customers will access your service online to search the IMDB movie database for movies they are interested in, and then rent movies (which we assume are delivered by the content provider; we don't do this part in the project). Once a customer rents a movie, they can watch it as many times as they want, until they decide to "return" it to your store. You need to keep track of which customers are currently renting which movies.

There are two important restrictions:

1. Because your store is brand-new, your contract with the content provider will only allow you to rent each movie to at most one customer at any one time. The movie needs to be first returned before you may rent it again to another customer (or the same customer).
2. Your own business model imposes a second important restriction: your store is based on subscriptions (much like Netflix), allowing customers to rent up to a maximum number of movies for as long as they want. Once they reach that number you will deny them more rentals, until they return a movie. (*Clarification: this restriction does not need to be enforced in your current design, but your current design needs to allow for a later enforcement of this restriction.*) You offer a few different rental plans, each with its own monthly fee and maximum number of movies.

In this assignment, your task is to design a database for your customers. You should take into account the above restrictions when designing your customer database, though some parts of

these restrictions will need to be handled in the second part of the project. There are many ways to go about choosing the appropriate entities and relationships, but we want you to make sure that your schema accounts for the following requirements:

1. Customers will need to log into your system using a combination of username and password.
2. You should maintain some contact information for your customers.
3. You want to be able to easily retrieve rental statistics for each particular city. (You may want to avoid storing a customer's mailing address as a single string)
4. You want to support a variety of rental plans (e.g., "Basic", "Rental Plus", etc).
5. Each customer can only have one plan at a time.
6. Each plan type has a different monthly fee, and determines how many movies each customer is allowed to rent at a time.
7. You should maintain a record of the history of all rentals.

## Deliverables

Submit your solutions through Blackboard by the due date. Each team only needs to submit one solution.

1. **ER.pptx** : Submit one single PowerPoint slide (no more than one slide) in 16:9 format (wide format) with your ER diagram of your customer database. Make sure that you depict all attributes, entities, relationships, and the necessary constraints. I recommend to use Lucidchart to draw your ER diagrams, then just copy it as PDF onto one single slides. Notice that I will collect all one-slide recommendations into one PowerPoint file and we will discuss some solutions in class (if you use 4:3 format, your slide formatting may get messed up during the merge). You can optionally use our class PPTX template available in our download folder, but do not have to. Please make sure to include all the names of the group members on the slide and the group number. Be prepared to present your solution in class.
2. **setup.sql** : Submit a sql file with all your create table and insert statements that populate each of your tables with a few tuples. Make sure that you use the appropriate types, and specify all key constraints. Your SQL table definitions should match the specifications in your ER diagram.

## Naming Conventions

For all documents (pptx or sql), you need to upload to BB, please follow the following convention. If you and your teammate's names are Michael Gray and Stephane Pompougnac, and are forming "group 4" (G04), and you submit a file for "phase 1" (P1), then follow the naming analogous to "P1\_G04\_GrayPompougnac\_setup.sql" and analogous for "P1\_G04\_GrayPompougnac\_ER.PPTX" before uploading to Blackboard.