International Movie Rentals Scenario   
DBA240 Final Project

The purpose of the project is to develop your ability to justify, design, develop, and implement information system applications. This task is for you to do data modeling based on the following scenario.

As the rule of thumb, the conceptual model of the application should contain about 5-10 entity types and the application prototype include functions for data insert, delete, update, and retrieval (*i.e.* **SELECT** statements).

**Note:**

The number of entity types is usually not a useful indicator. A good application may have around 5 entity types but have a rich set of functions.

# Database Design

This task analyzes the application requirements and designs a database supporting the business processes of the application. The database design is divided into the following steps:

## Conceptual design. [40 pts]

You analyze the application requirements and represent the application as a conceptual Entity-Relationship (ER) model. You need to verify the conceptual model against the requirements to ensure that your ER Diagram supports all business processes:

• Draw E-R Diagram in Oracle standards (*e.g.* softbox, entity names in uppercase, attributes names in lowercase, *etc*)

• Show the relationships with cardinality, optionality between the entities

• Remember the directions of crow’s feet.

***Note:*** You should not have many to many relationships in your E-R diagram. If you do, then you must add an intermediate entity.

For example, STUDENT and COURSE is M:M relationship. In this case, you can make an intermediate entity such as: REGISTRATION. Therefore, the relationships will be like this:

• STUDETN vs REGISTRATION – 1: M

• COURSE vs REGISTRATION – M:1

## Logical design. [40 pts]

This step consists of several sub steps. The goal of the logical design is to translate the conceptual ER model into tables.

Here are the steps:

1. Transforms the conceptual ER model into logical table instance charts for the implementation of the model in a relational database.
2. Maps the logical ER schema into tables. The difference between the previous step and this step is that the former provides a graphical view of the relations, while latter uses textual representation of the relations (*i.e.* SQL commands for creating tables).
3. All tables must be in 3NF. No need to show 1NF and 2NF.

## Project Demo [20 pts]

You should use word processor Microsoft Word or PowerPoint slides to give your presentation. Since this is an online class, you only need to submit the file (Word, or PowerPoint, *etc*.) to BlackBoard.

The due date is: May 3, 2019

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# Project Scenario

I’m the owner of a small video rental store. We have over 3,000 movies that we need to keep track of. Each of our movies has a DVD or VHS tape number. For each movie, we need to know its title and category (*e.g*., comedy, suspense, drama, action, war, or sci-fi).

Yes, we do have multiple copies of many of our movies. We give each movie a specific ID, and then track which DVD or VHS contains the movie. A movie can be either DVD or VHS format.

We always have at least one DVD or VHS tape for each movie we track, and each DVD or VHS tape is always a copy of a single, specific movie.

Our DVDs and VHS tapes are very long. We don’t have any movies that require multiple DVDs or VHS tapes.

We are frequently asked for movies starring specific actors. Mel Gibson and Julia Roberts are always popular. So we’d like to keep track of the star actors appearing in each movie. Not all of our movies have star actors. Customers like to know each actor’s “real” birth name and date of birth. We track only actors who appear in the movies in our inventory.

We have lots of customers. We rent videos only to people who have joined our 'video club.' For each club member, we’d like to keep their first and last name, current phone number, and current address. And, of course, each club member has a membership number.

Also, we need to keep track of what media each customer currently has checked out. A customer may check out multiple DVDs or tapes at any given time. We really need to keep a history of all our rentals. Each time a customer rents a DVD and/or tape, we would like to keep the rental date/time and the return date/time. All our rentals are due back the next day, so we don’t need to keep a due date.

Keeping this rental history will allow us to analyze the pattern of our rentals. We will be able to determine how many DVD/ tapes each customer rents and how many times a customer has returned a DVD or tape late. We will also know how many times a particular DVD or tape has been used and will then know when to retire each one. We will also be able to analyze our customers’ overall movie preferences.