

CMIS 320 Project 2

This assignment allows students to demonstrate their skills in the area of designing relational databases to satisfy specific business rules and requirements. The deliverables for this assignment include an Entity Relationship Diagram and detailed documentation describing the database design and structure.

In this assignment you will be provided with a description of an application (below) to create a properly formatted entity-relationship diagram (ERD) and design accompanying table layout using sound relational modeling concepts and practices. The relationships between the entities and the attributes for the entities will be identified and described. This database will provide the foundation for the follow-on assignment. The following paragraphs provide the background and summary of the business requirements.

You are a database consultant with Ace Software, Inc. and have been assigned to develop a database for the Acme video store here in town. The owners have been keeping their records of VHS tapes and DVDs purchased from distributors and rented to customers in stacks of invoices and piles of rental forms for years. They have finally decided to automate their record keeping with a relational database.

You sit down with the owners to discuss their business, and watch their operation for about a week. You discover quickly that a VHS and a DVD are both copies of a movie kept in a separate plastic case that is rented out. They have several copies of each movie they rent therefore there are several VHSs and DVDs for each movie title. You learn that in their inventory they have several thousand VHSs and DVDs, which they get wholesale from about a half dozen distributors. The VHS and DVD prices to them are based on the quantity of their shipment and the past business they have done with each company.

The price of a DVD for a movie might be different than the price of a VHS for the same movie, even from the same distributor. Each distributor provides different types of movies (e.g., suspense, horror, mystery, comedy, etc.). A single distributor may provide several different types of movies in both VHS and DVD format. It is possible to obtain the same movie from multiple distributors, and at different wholesale prices.

Each VHS and DVD has a unique identification number that the owners assign in their inventory, in addition to the distributor's serial number for the item. Each movie also has a unique identification number the owners assign in addition to the title, and any movie IDs the distributors use in their electronic catalogs. Distributors provide electronic catalogs to the owners and the information from these catalogs must be included in the database.

The owners need to record when a VHS or DVD is rented, when a VHS or DVD is returned, and all customer charges such as late and damaged fees, failure to rewind fees, and taxes. They need a report of which videos are returned late because there are standard and late charges. On occasion there are discount prices for certain movies or types of movies. Customers may want to rent movies based on actors or actresses, running length, type of movie, rating, year released, the director, and the academy awards won (by the movie, the actors, the actresses and/or the directors). Customers also want to know how many videos they have rented in the last month, year, and so forth. The owners need to keep only basic information on customers in their database, such as name, address, telephone numbers, etc.

There must be no limit to the number of VHS and/or DVD copies of a movie that the owners can have in their inventory. VHS/DVD ID numbers, movie ID numbers, and distributor ID numbers for VHSs, DVDs, and movies are all different. Also, each movie must be able to have an unlimited number of actors, actresses, directors, and academy awards (i.e., Oscars). Other types of awards (e.g., Golden Globe, People's Choice, etc.) are not of interest for this application. The rental of equipment, sale of VHSs, DVDs, popcorn, etc., is not to be kept in the database.

Using this information, you should:

- 1) Determine and list your **entities**. Then create **relationship sentence pairs** between those entities that are related. You should not have any many-to-many relationships.
- 2) Create an **entity/relationship diagram** (ERD) showing all your entities, attributes, and relationships. Sketch your ERD by hand or use a drawing program. Your diagram must be on a single page. All entities should be related to at least one other entity. Your ERD should have all one-to-many relationships and not have any many-to-many relationships.
- 3) Create metadata that describes the **table** created from each entity and the **column** created from each attribute in the ERD. Particular attention will be given to the proper specification of all primary key (via "PK") and foreign key (via "FK") columns in the table layouts. This table should also include the Oracle built-in data types to be used for each attribute. These should match your ERD exactly.

Submit everything for the above steps in a single Word or PDF file to the LEO assignment link. Make sure your work is neat and legible and your steps are in order.

Grading rubric

Attribute	Meets	Does Not Meet
Entities and attributes	20 points Student identifies a large potential set of entities and their attributes for the application	0 points Major problems with identification of entities and their attributes
Relationship sentence pairs	20 points Student properly formats all required relationship sentence pairs to describe one-to-many relationships	0 points Major problem with development of relationship sentences
ERD	40 points ERD properly includes and depicts all entities, attributes and relationships identified	0 points ERD is missing many items and/or has major problems with relationships
Metadata	20 points Spreadsheet of table specification metadata properly includes all tables, their columns, and all required details for the columns	0 points Major omissions for table specification metadata