

# Base de Datos I

## Examen Final (Proyecto)

Fecha/Hora Entrega: Ver en plataforma

**No se aceptaran entregas tardías**

### Overview

A los estudiantes de la asignatura Base de Datos se les requiere la entrega de un proyecto a través de la cual pondrán en práctica los conceptos aprendidos durante el curso. El proyecto deberá ser realizado en grupo. Cada grupo estará compuesto de no más de tres estudiantes.

Entregable	Detalle
Entregables DISEÑO 75%	Diagrama ER (30%)
	Normalización (45%) a) Normalizar las relaciones PASO A PASO hasta la 3NF b) Indicar en cada forma normal las dependencias funcionales con el DETERMINANTE c) No usar flechas para las dependencias funcionales d) Indicar claramente cuales son las llaves de cada relacion e) Mostrar TODAS las relaciones resultantes
Entregables IMPLEMENTACION 25%	Desarrollar la aplicación utilizando el lenguaje de programación de su preferencia

### Entregables en la Plataforma Virtual:

- a) Documentación diseño (formato pdf)
- b) Backup de la base datos
- c) Fuentes de la aplicación

### Notas Importantes:

- Seleccionar el modelador de datos de su preferencia para realizar diagrama ER
- Seleccionar UNA de estas notaciones para el ER: Crow's foot notation o la (min, max)-notation de Jean-Raymond Abrial de 1974 (ver Elmasri Figure 7.15)
- Si hizo asunciones para resolver el ejercicio, listarlas en detalle.
- Si utilizo un LIBRO de texto de consulta diferente al libro de texto de la materia para resolver el ejercicio, indicar la bibliografía completa.
- **No está permitido utilizar denormalización**

### Evaluación

El proyecto será evaluado tomando en consideración los siguientes elementos (ver puntuación arriba):

1. Entregables de diseño
2. Entregables de implementación (App funcionando correctamente)
3. Investigación (comandos SQL no explicados en clase)

## Ejercicio 1

TomKat Entertainment is a chain of theaters owned by former husband and wife actors/entertainers who, for some reason, can't get a job performing anymore. The owners want a database to track what is playing or has played on each screen in each theater of their chain at different times of the day.

A theater (identified by a Theater ID and described by a theater name and location) contains one or more screens for viewing various movies. Within each theater each screen is identified by its number and is described by the seating capacity for viewing the screen. Movies are scheduled for showing in time slots each day.

Each screen can have different time slots on different days (i.e., not all screens in the same theater have movies starting at the same time, and even on different days the same movie may play at different times on the same screen). For each time slot, the owners also want to know the end time of the time slot (assume all slots end on the same day the slot begins), attendance during that time slot, and the price charged for attendance in that time slot.

Each movie (which can be either a trailer, feature, or commercial) is identified by a Movie ID and further described by its title, duration, and type (i.e., trailer, feature, or commercial). In each time slot, one or more movies are shown.

The owners want to also keep track of in what sequence the movies are shown (e.g., in a time slot there might be two trailers, followed by two commercials, followed by a feature film, and closed with another commercial).

## Ejercicio 2

The video rental company has several branches throughout the USA. The data held on each branch is the branch address made up of street, city, state, and zip code, and the telephone number. Each branch is given a branch number, which is unique throughout the company. Each branch is allocated staff, which includes a Manager. The Manager is responsible for the day-to-day running of a given branch. The data held on a member of staff is his or her name, position, and salary.

Each member of staff is given a staff number, which is unique throughout the company. Each branch has a stock of videos. The data held on a video is the catalog number, video number, title, category, daily rental, cost, status, and the names of the main actors, and the director. The catalog number uniquely identifies each video. However, in most cases, there are several copies of each video at a branch, and the individual copies are identified using the video number.

A video is given a category such as Action, Adult, Children, Drama, Horror, or Sci-Fi. The status indicates whether a specific copy of a video is available for rent. Before hiring a video from the company, a customer must first register as a member of a local branch. The data held on a member is the first and last name, address, and the date that the member registered at a branch. Each member is given a member number, which is unique throughout all branches of the company.

Once registered, a member is free to rent videos, up to maximum of ten at any one time. The data held on each video rented is the rental number, the full name and number of the member, the video number, title, and daily rental, and the dates the video is rented out and date returned. The rental number is unique throughout the company.

### Ejercicio 3

The H. I. Topi School of Business operates international business programs in 10 locations throughout Europe. The school had its first class of graduates in 1965. The school keeps track of each graduate's student number, name when a student, country of birth, current country of citizenship, current name, current address, and the name of each major the student completed (each student has one or two majors). To maintain strong ties to its alumni, the school holds various events around the world.

Events have a title, date, location, and type (eg, reception, dinner, or seminar). The school needs to keep track of which graduates have attended which events. For an attendance by a graduate at an event, a comment is recorded about information school officials learned from that graduate at that event.

The school also keeps in contact with graduates by mail, email, telephone, and fax interactions. As with events, the school records information learned from the graduate from each of these contact communications.

When a school official knows that he or she will be meeting or talking to a graduate, a report is produced showing the latest information about that graduate and the information learned during the past two years from that graduate from all communications with that graduate, and the events the graduate attended.

### Ejercicio 4

Although you always wanted to be an artist, you ended up being an expert on databases because you love to cook data and you somehow confused database with data baste. Your old love is still there, however, so you set up a database company, ArtBase, that builds a product for art galleries. The core of this product is a database with a schema that captures all the information that galleries need to maintain.

Galleries keep information about artists, their names (which are unique), birthplaces, age, and style of art. For each piece of artwork, the artist, the year it was made, its unique title, its type of art (e.g., painting, lithograph, sculpture, photograph), and its price must be stored.

Pieces of artwork are also classified into groups of various kinds, for example, portraits, still lifes, works by Picasso, or works of the 19th century; a given piece may belong to more than one group. Each group is identified by a name (like those just given) that describes the group.

Finally, galleries keep information about customers. For each customer, galleries keep that person's unique name, address, total amount of dollars spent in the gallery (very important!), and the artists and groups of art that the customer tends to like.

### Ejercicio 5

Stillwater Antiques buys and sells one-of-a-kind antiques of all kinds (for example, furniture, jewelry, china, and clothing).

Each item is uniquely identified by an item number and is also characterized by a description, asking price, condition, and open-ended comments. Stillwater works with many different individuals, called clients, who sell items to and buy items from the store.

Some clients only sell items to Stillwater, some only buy items, and some others both sell and buy. A client is identified by a client number and is also described by a client name and client address.

When Stillwater sells an item in stock to a client, the owners want to record the commission paid, the actual selling price, sales tax, and date sold. When Stillwater buys an item from a client, the owners want to record the purchase cost, date purchased, and condition at time of purchase.