Project: M1
Advanced Data Bases

Details of the project

This project can be done by groups of 2 students. You must prepare a script that creates the database and populate the different tables with initial data. You should also prepare a set of queries that demonstrate the correct functioning of your project. Prepare also the queries that focus on the weaknesses of your project.
The study of this case should include: the E/A or class diagram, with the different tables, a short description of the main functionalities and how to test them, the list of necessary functions, and a test data set that allows to quickly test your code.

Note that the modeling step is very important in this project.

Description

A network of theatrical companies wishes to make a common management of its shows. Each theater company in the network has its own performance hall with a fixed capacity. It produces its creations and hosts productions from other companies of the network. Each company manages independently its room, its production, as well as its budget.

The production costs

When a company produces a show, it incurs a fixed production costs related to the show: decors, costumes, etc. Here, we manage only the total global amount of the fixed costs to create a show. This cost is engaged once, regardless the place(s) of the show. Whenever a show is performing, you have to pay the actors, the lighting, etc. We can assume that the distribution does not change from one representation to another.

The outdoor productions

When a company presents a show in another theater, it incurs travel costs for each theater where the show will be performed. These costs are supported by the same theater, which produced the show.
When the theater hosts a show produced by another company, it pays to this later a fixed global price for all the set of the shows that will be performed there. The payment is made to the company which produced the show the day of the first presentation in the corresponding theater.

Ticketing

Whatever the kind of event (local production or not), the ticket revenues go to the theater where the show took place. The received payments are done while the ticket sale.
The pricing policy of the ticket will consider various cases of possible promotions. It is based on a “normal reference rate" and “reduced reference rate" (for children, students, unemployed, elderly...). These references rates will be common to all the representations, and serve as a basis for promotions calculations. We consider that tickets are not numbered.
Some promotions may occur depending on the situation of customers, for example:

- 20% discount if you are still 15 days before the representation.
- 30% discount if it is the performance day and whether the room is filled with less than 50%,
- More preferably, a 50% discount if the room is filled with less than 30%.

Some promotions can be applied to all the shows, some others can be applied to specific ones. In other cases, tickets are sold at the reference price.

Grant management

An important part of the budget comes from grants accorded to theaters. The subsidies are granted by agencies (e.g. Municipality, Ministry of Culture, private donors. . .). They are negotiated for a periodic and fixed durations. Thus, a town council is engaged to give a certain amount every month over 5 years. A ministry contribute less frequently but with a larger amount. Of course, a sponsor can give a single donation.

Accounting and payment schedule

For accounting reasons, one must know the balance of each theater at the end of each month.
At the end of each month, a calculation of revenues and expenditures is triggered, and the new balance is backed up.
When the company gives a show, the rule is as below:

1. Comedians’ fees is given at the same night of each representation.
2. The staging costs are paid at the first evening of the show. Especially if a show is given several evenings, payment is made once the first night.
3. When a production is presented in another theater, travel costs are paid on the day of the arrival of the company in the theater.

Particular Functionalities

Since you should test your database with its different described behaviors, you do not have to use the current date, just create a table for this purpose: a table to model the date, and a value change in this table will simulate the passage of time.
Managers will ask all kinds of questions about the diverse behaviors of these theaters, which you will bring answers by writing for example PL/SQL procedures or functions that do the different queries and computations.

Organization: Is no representation of a company does not overlap another one? (A company would be provided for two theaters at the same time; both shows are presented in the same place)?
What is the set of cities in which a company plays for a certain time period?

Ticketing What are the ticket prices today? For each representation, what is the distribution of tickets by price, tariff…? For each theater, what is the average load factor?

Accounting We will easily know the current balance, which will be updated in particular for each ticket sales, and for each day spent.
Since we are naturally interested in a prediction of the account balance at one time, a table will testify to the expected schedule of costs / recipes?
Can you respond to these accounting issues?
1. The first date when the balance of a theater will move promptly to the red (in the hypothesis when no ticket is sold out).
2. The first date when the balance of a theater will move permanently to the red (in the hypothesis when no ticket is sold out, and the expected revenue does not offset enough).
3. Are there enough tickets for sale to avoid these situations?
4. A show given by a company was sold out with a certain price. Is it a cost effective for the company? (Compared to costs incurred (salaries, travel, staging))
5. Was it the effective cost for the theater? (Costs / ticketing)

Network Are there companies that will never play in their theater?
Which ones make systematically their first show at home? And outside?
What are the most popular shows in a certain period?

- Number of representation
- Number of potential viewer
- Number of seats sold

Schedule

The schedule of the project is as follow:

- December: Quick-O Session. During this session, you will create the groups you analyze the project, divide the work to do between project members and start working on the project. Note that you ca also work individually. If you have any question, you can ask the professor directly.
- Next, you will have about two weeks to work on the project at home. If you have any question, do not hesitate to ask your professor by mail.
- Then, we will have another session together on January, to continue to work and to answer the different questions. During this session, you have to finish the creation of database and the different queries.
- Project Submission. You must submit your project on Moodle (a report + scripts) before 17th of January.

Deliverable

The deliverable consists of a single archive named *LASTNAME1.FirstName1.LASTNAME2.FirstName2.rar* or *.zip* to identify the project members. The archive should contain:

- the report : named *report.pdf*
- the script for populating the database + the script containing the different functions/queries.
- a *readMe.txt* : containing a brief description of the realized part of the requirement.

The report must have between 5 and 10 pages. It includes an introduction, a short description of the project subject, some functions/queries for the most important issues of the project, a discussion of the encountered problems/difficulties, and a conclusion. The report should not explain your code in details, let alone include portions of your code: good code should be well self-commented. The code must be properly indented and commented. It must comply with the standard naming rules for variables and functions.

Finally, any detected plagiarism will be severely sanctioned.

HAVE FUN!