

## OBJECT RELATIONAL ASSIGNMENT

### ASSIGNMENT GOALS

Think about the possibilities open by the object-relational schema, with respect to the relational schema, namely the use of user defined types, with objects combining data structures and the functions to manipulate them, inheritance, nested tables and vectors, object references and comparison and sorting methods. Develop a small illustrative database.

### TEAM

The assignment must be executed by teams of one or two elements.

### SUBJECT

The facilities where cultural activities take place are characterized by a name and a capacity, are of a certain room type and are located in an address in a municipality. An id number has been attributed, for identification purposes. The type is represented by a number with an associated description (theatre, cinema, ...).

A municipality is described by an official code and a designation and are located in a district and in a region. The need to indicate the region of the municipality is due to the fact that some districts include municipalities from more than one region. The districts have also official codes and designation. There is also a region attribute, with the region code, for the cases of the districts completely integrated in a region. In the cases that some municipalities of a district are in a region and others in another, the attribute region is null. The regions also have a code and a designation, plus the attribute NUT1, which may be Continente, Açores or Madeira.

The activities take place in the cultural facilities. The recorded activity categories are cinema, circus, dance, music, bullfights and theatre. We have chosen to use these designations for the ref attribute and to repeat them in the attribute activity of the activities table. As in each place there may be activities of more than one category, each row in the Uses table indicates the id of the place and an activity occurring there.

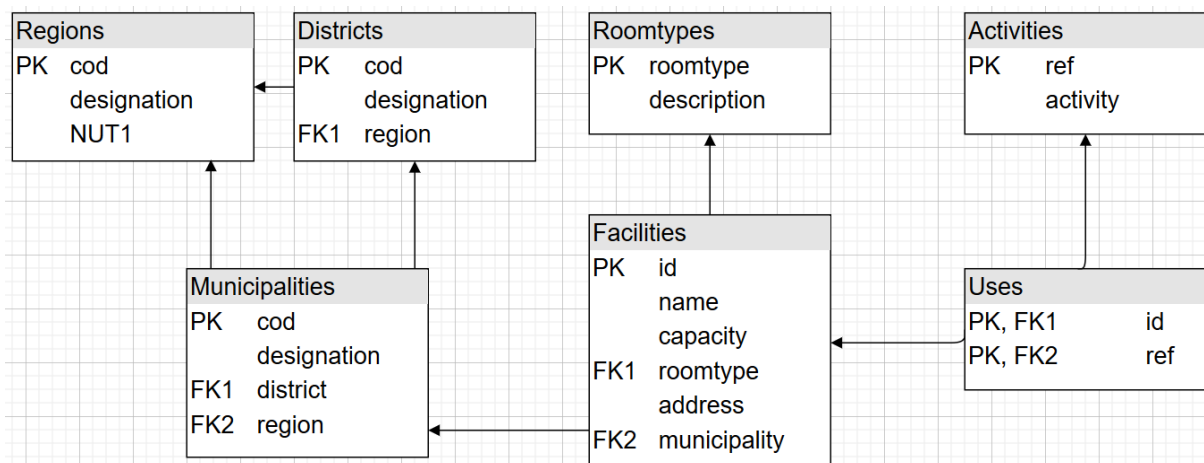


Figure 1 Database model for the Cultural Facilities case.

The tables of this database are available in the user GTD8 in the Oracle server (connection: BD, user: <user>, password: <pass>, host: oraalu.fe.up.pt, port: 1521, SID: ALU).

- 1) Design an object-relational data model for this situation, exploiting the SQL3 extensions. The model may be drawn schematically and then in actual DDL and implemented.
- 2) Populate the object relational model with the data in the relational database.
- 3) Add some methods that may be useful for some common SQL queries.
- 4) Execute some queries on the OR DB.
  - a) Which are the facilities where the room type description contains 'touros' and have 'teatro' as one of their activities? Show the id, name, description and activity.
  - b) How many facilities with 'touros' in the room type description are there in each region?
  - c) How many municipalities do not have any facility with an activity of 'cinema'?
  - d) Which is the municipality with more facilities engaged in each of the six kinds of activities? Show the activity, the municipality name and the corresponding number of facilities.
  - e) Which are the codes and designations of the districts with facilities in all the municipalities?
  - f) Add a query that illustrates the use of OR extensions.