Tecnologia de Bases de Dados

Assignment '1999 Parliament elections'

This assignment's context is the October 10th, 1999 Parliament elections.

The country is divided into circumscriptions, called districts (distritos), though on the islands, the circumscription coincides with the region. The parties (partidos) present lists (listas) for the circumscriptions where they stand up for election. It is at the district level that the MP mandates are obtained. MP elected by the emigrants are not considered, so the total number of mandates is 226.

However, voting results in parties are recorded with a finer grain at the parish (freguesias) level. Parishes belong to municipalities (concelho), which belong to districts (distritos).

The total votings in parties, plus the white (brancos) and null (nulos) votes are the number of voting citizens (votantes). Adding up the abstentions, one gets the enrolled (inscritos). The information on enrolled, abstention, white and null votes is only known at the district level.

Parties may submit lists just to some districts.

Data model

This database has 7 tables with actual data. (Oracle database, user GTD11)

- The tables **freguesias** (parishes), **concelhos** (municipalities) and **distritos** (districts) are relative to electoral circumscriptions and administrative areas. The region is ('C' - Continent, 'A' - Açores, 'M' - Madeira).

- The table **listas** (candidate lists) has information about the number of mandates obtained by each party (sigla) in the districts (codigo) where it has participated. The value 0 means that the party has presented a list, but it has no MP mandate.

- The table **votacoes** (voting) keeps the votes the party receives in the parishes.

- The table **participacoes** (participations) contains, for each district, the number of enrolled citizens (inscritos), voting (votantes), abstentions (abstenções), null (nulos) and white (brancos) votes. Note that:

    inscritos = votantes + abstenções

    votantes = soma de votos no distrito + brancos + nulos.

- The table **partidos** (parties) records the acronym (sigla) and the designation of the 12 existing parties.
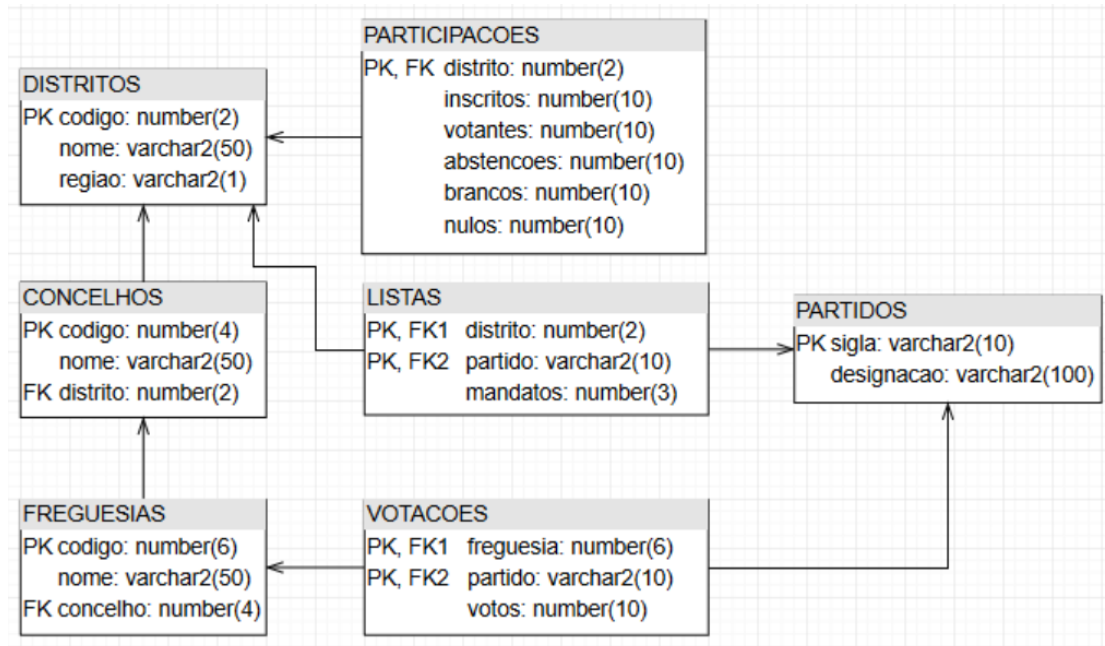
Figure 1: Relational schema of the Database

Questions

1. What is to be done to guarantee that there are no candidates participating in more than one list in each election? Suppose the table 'Listas' has one more column named 'Election' and a table of 'Politicians' with a personal 'ID' number, 'name' and 'date of birth'.

2. Express the following queries in SQL.

   a) Calculate the total number of Members of the Parliament that each party has.

   b) In each district, how many votes did each party get?

   c) Find the districts' names and the parties' designations for the cases where the party got an absolute majority in the district (meaning more votes than the sum of the remaining lists).

   d) Check whether any district violates the following integrity rule: the sum of the votes in the several lists, the white and the null votes, plus the number of abstentions must equal the number of enrolled citizens.

   e) What are the differences between the percentages of mandates and votes for each party at the national level?

   f) Which parties got Members of the Parliament in every district?