**PROJECT REPORT**

The present project consists of the implementation of the business rules of a dental office scenario, in which the control of the appointments and treatments made to the patients must be carried out, as well as the billing and registration of the payments received and additionally the issuance of referrals to specialists in those cases in which the dentist cannot provide a treatment.

The first part of the project includes the definition and construction of a relational database to be implemented in MySQL. The elements of this section are listed below.

1. **Relational Schema:** The database model designed consists of 17 tables with their respective attributes, relationships, primary keys, foreign keys, constraints and indexes. The Entity Relationship Diagram and an SQL script are provided with the commands to create tables, keys, indexes and constraints. The tables that comprise the model are mentioned below.

* Tables used to represent the main elements identified in the business rules:
  + PATIENT
  + SPECIALIST
  + TREATMENT
* Tables used to manage the information of the transactions carried out (transactional tables):
  + APPOINTMENT
  + APPOINTMENT\_TREATMENT
  + BILL
  + BILL\_TREATMENT
  + BILL\_LATE\_CANCELLATION
  + PAYMENT
  + REFERRAL
  + REFERRAL\_TREATMENT
* Tables that support transactions managing statuses, fees, and types (support tables):
  + APPOINTMENT\_STATUS
  + BILL\_STATUS
  + TREATMENT\_STATUS
  + TREATMENT\_FEE
  + LATE\_CANCELLATION\_FEE
  + PAYMENT\_TYPE

1. **Test Data:** In order to test the database model, a test data insertion SQL script is included for the transactional tables, and also for patients, specialists, treatments and fees. On the other hand, for the tables of payment types and status of appointments, bills and treatments, the data that were considered appropriate for the design according to the business rules are provided.
2. **Queries:** In order to implement the business rules, a set of SQL scripts are provided to execute Select, Insert, Update, Delete and Create operations in the model tables using the test data.

The second part of the project consists of a demonstration of the Codd’s rules regarding the database. The first 10 rules are demonstrated using SQL code including a narrative explanation. Rules 11 and 12 do not require to be demonstrated with SQL.

Finally, for the implementation of the project the SQL scripts must be executed in the following order:

1. Queries\_Create.sql: Create the tables, keys, indexes, comments
2. Test\_Data.sql: Insert test data
3. Queries\_Select.sql: Gets initial values from test data
4. Queries\_Insert.sql: Insert new data (referral, appointment, treatment fee, payment, bill)
5. Queries\_Update.sql: Update some information in test data
6. Queries\_delete.sql: Cancel (delete) an appointment