Sistemas de Informação e Bases de Dados
Assignment 3 - Using the Database

December 2019

1 A Web Application Using the Database

Using PHP and HTML, develop a simple Web-based application leveraging the database created and populated in Part 2 to perform the following tasks:

- A client comes to the clinic asking for an appointment. We need to check if the client already exists in the database, and check if there is a doctor available for the desired date/time. You should therefore create Web pages to support these verifications and the search for matching clients with basis on different information elements: given the VAT, a (part of the) name for the client, and/or the (parts of the) address, you should display the records of matching clients. On the displayed result, include the possibility of registering a new appointment for the listed clients. Include also options for adding new clients to the database, and for listing the doctors that are available for consultations at a given date/time (you can consider that doctors can give consultations on any day, and that all consultations last for one hour, starting at exact hours between 9AM and 5PM).

- Create a set of Web pages to support the access and registry of information associated to an appointment/consultation. Selecting (or clicking on) a given client in the results page of the previous interaction should lead to another page listing, chronologically, all previous appointments and consults for that client. Selecting (or clicking on) an appointment/consult from this list should lead to a page presenting all information on the appointment/consult, including the SOAP notes, existing diagnostic codes, and any existing prescriptions. There should also be an option for adding information for a new consultation (i.e., add information to an appointment created to the interaction from the previous point), including the assisting nurse(s), SOAP notes, diagnostic codes, and prescriptions.

- Create a set of Web pages to support the registry of information associated to a *dental charting* procedure. The list of appointments/consults for a given client, or alternatively the detailed page with information on a consultation that was created for the previous interaction, should include the

option of entering the results for this particular type of procedure. Selecting this option should lead to a page with a form for inserting the results, including the per-teeth measurements for the gap between the tooth and the gums. Keep in mind that the insertion of all the measurements related to a given *dental charting* procedure should be made in the context of a single transaction.

You do not need to code all the functionalities of a full application, instead focusing only on the ones that were asked. If some other operation is needed (e.g., inserting new doctors, inserting new diagnostic codes, etc.), you can perform it manually through the MySQL command line prompt.

Consider using simple HTML forms and tables to illustrate the results, avoiding complex Web design choices. Whenever appropriate, use prepared statements in the PHP code, thus increasing performance and/or avoiding security problems with SQL injection.

2 Functions, Triggers and Stored Procedures

Provide the SQL instructions corresponding to each of the aforementioned tasks:

- Write a trigger to update the age of the clients according to the birth date and the current date. The trigger should fire whenever a new appointment for a client is inserted into the database.
- Write triggers to ensure that (a) an individual that is a receptionist or a nurse at the clinic cannot simultaneously be a doctor, and (b) doctors cannot simultaneously be trainees and permanent staff.
- Write triggers to ensure that different individuals (doctors or clients) cannot have the same phone number.
- Write a function to compute to total number of *no-shows* (i.e., appointments where the client missed the consult) for clients of a given gender, within a given age group, and within a given year (i.e., the gender, year, and upper/lower limits for the age should all be provided as parameters).
- Write a stored procedure to change the salary of all doctors that have been practicing for more than x years, where x is an input parameter. The new salary should correspond to a raise of 10 percent over the original salary, in the case of doctors with more than 100 consults in the current year, and to a raise of 5 percent otherwise.

3 Submission Notes

A report for the 3rd assignment should be submitted to Fénix as a single PDF file, readable with a standard program such as Adobe Reader. The report should have one separate section for each of the aforementioned tasks.

Please include the PHP/HTML code together with a screenshot of each Web page. Include also the URL for a working version of the web application (i.e., **use the sigma cluster from IST to deploy the web application**, as shown on the lab classes, and provide the corresponding URL in your report), together with brief instructions for how it should be used.

The document cover page should mention the names, student numbers, and group number of its authors. Provide notes explaining the rationale behind non-trivial implementation decisions.