Special Topics in Databases: Data Issues for Decision Making in Healthcare

Project Title: Public Health Surveillance System

Goal: to design and build a database as a backbone for a public health surveillance system and, based on this, a web-based public health surveillance application. The application has two functions: one for the input of information and a second one for the selection of public health indicators and time-series.

You are expected to develop

1. A model (can be either a UML or an ERD diagram) for the backend database of the public health surveillance system
2. A SQL database schema which stores information about
    - The geographic location of the citizens
    - The demographics of the citizens
    - The occupation of the citizens
    - Chronic diseases of the citizens
    - Nutrition habits
    - Tobacco, alcohol consumption
    - The geographic location of healthcare structures (hospitals, rehab centers etc.)
    - The characteristics of each location which are related to health problems (i.e. air pollen concentration etc.)
3. A web application based on your database

You will be meeting with your Professor to specify the attributes and validate the schema for the above procedures.

The overall procedure

USERS are public health professionals participating to population surveys (module 1) and public health officials (module 2).

Three categories of information are useful for successful health surveillance of populations

(i) Information about health related parameters of the citizens

(ii) Information about health related parameters of the environment

(iii) Information about healthcare resources (location of hospitals and other health services)

Module 1 is used by the public health professionals to store information about each citizen (geographic location of the citizens, demographics and occupation of the citizens, chronic diseases, nutrition habits, tobacco, and alcohol consumption). Contextual information about the environmental parameters and the healthcare structures is expected to have already been pre-stored into the database.

Module 2 is used to provide to public health officials, useful indicators based on the aggregation of the data which is stored in module 1

1. Location based information of the above mentioned factors (ie nutrition habits in each location)
2. Time based information of the above mentioned factors (ie population increase/decrease of tobacco use over time)

You will be meeting your Professor to specify the list of indicators which will be included into the application.

Technical considerations

Your DBMS can either be a MySQL or MySQL Server. Your web application can be built with any programming language you prefer, but do not use automated tools like i.e. PowerBuilder.

Team members

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You have to select your role within your team. Once you decide, you have to inform me via email.

The roles are as follows:

Role A: modeling of the database requirements, conceptual schema and documentation

Role B: database designer

Role C: web application developer

The roles are distinct but you are expected to work as a team.

Deadline: November 21, 2013

You have to return back a DVD/CD/USB with

1. the database and the source code of your web application
2. a five to ten page documentation
3. the detailed contribution of each member of the team