Information Systems and Databases Assignment 1 - Database Model and Schema

Problem Domain

The VetDB project is concerned with the development of an information system for a veterinary hospital. The aim of this information system is to store the different types of data generated during the practice so it can be consulted on an online platform by veterinarians on future visits, as well as an archive for research.

The database should store information regarding clients, doctors, and assistants. For all three cases we require storing the name, address (including line1, line2, postcode, and city), and a phone number. For doctors, we require additional information, including the specialization (e.g., surgery, dermatology, internal medicine, etc.) and a small biographic description. They are identified by a numeric, the OMV *cedula*.

A client is further identified by its Tax Identification Number (TIN). Each owner can own more than one animal, and each animal has one specific owner. Animals are mainly described by their name, age, color, and gender. It should also be possible to know the most recent measurement of weight in grams.

This practice is specialized on mammals, fish, birds, and reptiles. Mammals can be assigned to more refined categories namely cat, dog, and other. For cats and dogs we want to be able to look up the breed. For all other animals, we want to be able to look up the species.

Animals can visit the veterinary hospital at different dates, and each of these encounters corresponds to a visit that is summarized in the database. Each visit is linked to a single animal, a single doctor, and a single client (not necessarily the owner of the animal). Veterinary assistant(s) may participate in each visit.

Veterinary visits are described through 4 textual attributes corresponding to SOAP notes (i.e, an acronym for subjective, objective, assessment, and plan). The inclusion of SOAP notes is not mandatory, although strongly recommended for each encounter with a veterinary physician. (IC)

- Subjective: textual summary of client observations, concerns and insights;
- Objective: textual summary of the relevant history, and results from any physical examination;
- Assessment: textual summary containing a differential diagnosis list and a prognosis;
- Plan: textual summary of substantive actions and activities.

Each visit may be associated to one or more diagnostic codes. The diagnostic codes should be standardized (i.e., restricted to a controlled vocabulary such as the AAHA Problem and Diagnosis Terms). The system should store a copy of the short textual description for each diagnostic code in the database.

The prescription of medications can happen whenever a visit has at least one diagnostic. Each one, identified by a numeric identifier, contains medication(s), described by name, laboratory, and dosage.

A visit might also involve one or more procedures (e.g., radiography, tests, surgical, or others). For all procedures, the database should store a small textual description summarizing the actual procedure and/or its outcome as well as a larger textual report. If the procedure was performed by an assistant (or assistants) working for the hospital, the corresponding assistant(s) should also be stored in the database.

Procedures of the type radiography are additionally associated to a folder/directory containing the resulting images, and the database should indicate the path for each procedure.

In the case of test procedures, the database should store a set of indicators measured through the test, together with the observed values, and the units of measurement associated to those values (e.g., in the case of blood tests, we can have measurements corresponding to the number of neutrophils, lymphocytes or monocytes, in all three cases reported as a percentage of the white blood cells present in the sample). For each indicator, the database should also store a reference value range (e.g., the measurement of a value significantly different from the reference can indicate a problem with the animal), together with a textual description detailing the reference value range.

Expected Results

- An E-R model describing your proposed database design. Every design decision that can be captured in the E-R model should be represented in the diagram.
- SQL instructions to create the database in PostgreSQL.