Sheila Chan
Shannon Chen

PATS: Database Design in 3NF

owners (owner_id, first_name, last_name, city, state, street, zip, phone, active)

pets (pet_id, animal_id, owner_id, name, date_of_birth, female, active)

animals (animal_id, name)

notes (note_id, user_id, title, date, content, entity_belongs_to, entity_id)

visits (visit_id, pet_id, *overnight_stay*, *total_cost_of_visit*, date)

animal_medicines (animal_id, medicine_id, dosage)

medicines (medicine_id, name, description, vaccine, method, stock_quantity, unit)

visit_medicines (visit_id, medicine_id, discount, units_given, *actual_cost*)

procedures (procedure_id, visit_id, name, description, standard_time)

visit_procedures (visit_id, procedure_id, *actual_cost*, discount)

medicine_costs (medicine_cost_id, medicine_id, entity_id, entity_belongs_to, cost, start_date, end_date)

procedure_costs (procedure_cost_id, procedure_id, entity_id, entity_belongs_to, cost, start_date, end_date)

users (user_id, username, email, password_digest, password_confirmation)

primary key

foreign key

summary field

Database Design Notes:

1. The *notes* table is a polymorphic association that belongs to the *owners*, *pets*, and *visits* tables. The field *entity_belongs_to* is a string value of the name of the table that specific note belongs to. In addition, the field *entity_id* is an integer that refers to the specific record in the parent table that the note record is referring to. Because the *notes* table is a polymorphic association, it is difficult to maintain referential integrity. Foreign key constraints can't be set for polymorphic associations

2. The *overnight_stay* boolean field in the *visits* table is a summary field that points TRUE when the calculated sum of all *standard_time* for all procedures in one visit is equal to or exceeds 12 hours.

3. A trigger will automatically update overnight_stay when the sum of all *standard_time* for all procedure in one visit is equal to or exceeds 12 hours.

4. The *actual_cost* field in visit_medicines is a summary field that will be updated by a trigger that depends on the current cost for that medicine, the number of units given and the discount during that visit

Sheila Chan
Shannon Chen

5. The actual_cost field in *visit_procedures* is a summary field that will be updated by a trigger that depends on the current cost of procedure and the discount during that visit

6. The *total_cost_of_visit* summary field in the *visits* table will be updated by a trigger that is calculated by adding together the *actual_cost* for procedures and *actual_cost* for medicines during that particular visit

7. There should be an ON DELETE RESTRICT ON UPDATE CASCADE restriction for all foreign keys

8. The *methods* field in the *medicines* table is limited to oral, intravenous and injection.

9. All fields should be required except for *date_of_birth* in the *pets* table and

10. discount NUMERIC DEFAULT 0.00 for both the *visit_medicines* and *visit_procedures* tables

11. Date values in *notes* should be set as a default to current_date

12. The *active* fields in *owners* and *pets* should be set as DEFAULT TRUE

13. *overnight_stay* and *total_cost_of_visit* in *visits*, *actual_cost* in *visit_medicines*, *actual_cost* in *visit_medicines* are all violations of 3NF but we chose to do this because the calculations are expensive.

14. The *end_date* field in *procedure_costs* should be a NULL value that will be updated by a trigger to current_date when the cost of the procedure changes.

15. The *end_date* field in *medicine_costs* should be a NULL value that will be updated by a trigger to current_date when the cost of the medicine changes.

Sheila Chan
Shannon Chen