Assignment 1

ENSF 608 Fall 2020

Department of Electrical and Computer Engineering
Schulich School of Engineering

The objective of this assignment is to apply your understanding of entity-relationship and enhanced entity-relationship modelling concepts.

Due: Friday, October 2nd, 11:59 PM

Submission: This is an individual assignment. Your submission must be your own original work.

Please upload your solution as a single PDF file to the Assignment 1 Solutions D2L dropbox folder. The file should be named in the following format: Lastname_Firstname_Assignment1.pdf

Your solution may be handwritten or typed, and you may draw your diagram by hand or by using software tools. Handwritten work may be scanned or photographed (*tip*: try using an app such as Microsoft Office Lens).

Weighting: This assignment is out of 25 marks and is worth 10% of your overall grade.

Question Narrative

The owners of YYC Pet Resort, a rapidly growing boarding facility for cats and dogs, need a database to organize their client booking information. They have provided the following information:

"Our clients are very loyal and sometimes book more than one pet at a time. Since we have so many repeat customers, we give each client their own identification number. We also need to record the client name, address, and phone number. Clients have the option of participating in the rewards program. These VIP clients earn points each time they make a booking for their pets.

Clients must leave their credit card number when placing a booking. They must also leave the name and phone number of an emergency contact for their pets. We also require that they leave the name of their pet's veterinarian.

For each pet, we need to keep track of their name, age, medication(s), and whether their vaccines are up-to-date. It also helps if we can identify their colour(s) and breed, just in case we have multiple pets with the same name. We also need to keep track of what brand of food they eat, the amount of food per meal, and the number of meals they should be given per day.

We also offer a customized experience for our clients and need to make sure our employees know how often to provide each service per pet. Clients may choose how many hours per day that their cats will visit the sunroom. Clients may choose to have their dogs walked once a day or twice a day. If a dog is able to play fetch, they may also sign-up for a fetch session each day. For all of our senior pets (both the cats and dogs), we also offer up to three massages per day, depending on what the client chooses."

Assignment Questions

Based on the requirements narrative above, design and draw an EER diagram for the described application. Your solution must include the following:

Design Explanation (5 marks)

- Explain your design process and state any assumptions that you have made. What decisions did you make and why? Include the following information:
    - Choose one entity type and describe why its key attribute is unique.
    - Choose one relationship and how it relates the participating entity types.
    - Explain how at least one attribute can be derived from other attributes.

  A 5/5 solution will be well-organized, clearly address all the points listed, and outline the main decisions when designing the EER model. The design explanation should be approximately half a page or less in length.

Technical Criteria (20 marks total)

- *(16 marks)* Your EER diagram must include at least 80% of the following components (i.e. at least 16 different types of components should be identifiable in your model).
    - Entities:
        1. Entity Type(s)
        2. Weak Entity Type(s)
    - Relationships:
        3. Relationship Type(s)
        4. Identifying Relationship Type(s)
    - Attributes:
        5. Simple Attribute(s)
        6. Key Attribute(s)
        7. Multivalued Attribute(s)
        8. Composite Attribute(s)
        9. Derived Attribute(s)
        10. Partial Key Attribute(s)
    - Participation Constraints:
        11. Total Participation(s)
        12. Partial Participation(s)
    - Cardinality Constraints:
        13. 1:1 Cardinality(ies)
        14. 1:N Cardinality(ies)
        15. N:1 Cardinality(ies)
        16. M:N Cardinality(ies)
    - Specialization
    - Generalization

    - Constraints on Specialization/Generalization
        17. Disjoint & Total
        18. Disjoint & Partial
        19. Overlapping & Total
        20. Overlapping & Partial
    - Attribute Inheritance
    - Categories (Union Type)
- *(1 mark)* All key attributes must be identified
- *(1 mark)* Relationships should be marked with cardinality/participation constraints
- *(1 mark)* Specializations and generalizations should be marked with disjoint/overlapping/total/partial constraints
- *(1 mark)* Your diagram must be clear, organized, and readable
- You may add any EER diagram components not listed above

Marks will be distributed as outlined above. Points will be taken off for inaccuracies in translating between the narrative and the EER model.