CSC423 Project

Report 1 - Developing a Conceptual Data Model

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1 Author & Change Control

Author, Change Control

Date	Author	Version	Description
28-Oct-2022	William Blair	1.0	Conceptual Data Model

2 Developing a conceptual data model

2.1 Identifying the main entity types

The main entity types are:

- Company
- Clinic
- Staff Member
- Pet Owner
- Owner's Pet
- Examination

2.2 Identifying the main relationship types between the entity types identified in "a"

2.3 Determining the multiplicity constraints for each relationship identified in "b"

Assumptions

- Clinics are contacted by at least one pet owner at some point.
- A staff member can only work at one clinic at a time.
- A staff member who is a manager at a clinic, is also a manager of the staff members who are not managers who work at the same clinic.

Entity 1	Relationship	Entity 2	Participation	Cardinality	Multiplicity	Type of Relationship
Company	runs	Clinic	1	*	1...*	1...*
Clinic	is run by	Company	1	1	1...1	
Clinic	employs	Staff	1	*	1...*	1...*
Staff	is employed by	Clinic	1	1	1...1	
Clinic	managed by	Staff	1	1	1...1	1...1
Staff	manages	Clinic	0	1	0...1	
Staff	manages	Staff	1	*	1...*	1...*
Staff	managed by	Staff	1	1	1...1	
Pet Owner	contacts	Clinic	0	1	0...1	1...*
Clinic	contacted by	Pet Owner	1	*	1...*	
Clinic	registers	Pet	1	*	1...*	1...*
Pet	registered at	Clinic	0	1	0...1	
Pet Owner	owns	Pet	1	*	1...*	1...*
Pet	is owned by	Pet Owner	1	1	1...1	
Pet	is examined by	Staff	1	1	1...*	1...*
Staff	examines	Pet	0	*	0...*	
Pet	has	Examination	1	*	1...*	1...*
Examination	is performed on	Pet	1	1	1...1	
Staff	performs	Examination	0	*	0...*	1...*
Examination	is performed by	Staff	1	1	1...1	

2.4 Identifying attributes and associating them with entity or relationship types

- Clinic (clinicNo, name, address, telephoneNo, maxPets, maxStaff)
- Staff (staffNo, name, address, telephoneNo, DOB, position, salary)
- PetOwner (ownerNo, name, address, telephoneNo)
- Pet (petNo, name, DOB, species, breed, color)
- Examination (examNo, chiefComplaint, description, dateSeen, actionsTaken)

An address attribute is expanded to address (street, city, country, zip). And for Staff and Pet Owner, name is expanded to name (firstName, lastName).

2.5 Determining candidate and primary key attributes for each (*strong*) entity type

Examination is a **weak** entity type because an examination depends on the pet. All the rest are **strong** entity types.

Clinic

- **Primary key** - clinicNo
- **Candidate keys**
  - (name, address)
  - (name, telephoneNo)

Staff

- **Primary key** - staffNo
- **Candidate keys**
  - (firstName, lastName, telephoneNo)
  - (telephoneNo, DOB)

Pet Owner

- **Primary key** - ownerNo
- **Candidate keys**
  - (firstName, lastName, address)
  - (firstName, lastName, telephoneNo)

Pet

- **Primary key** - petNo
- **Candidate keys**
  - (name, species, DOB, breed, color)

2.6 Generating the E-R diagram for the conceptual level (no FKs as attributes)