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CSC423
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CSC423 Project Part 2

a.)

      Clinic(clinicNo, clinicName, address, phoneNumber)
      Staff(staffNo, name, address, phoneNumber, dOB, position, salary, clinicNo)
      Owner(ownerNo, name, address, phoneNumber)
      Pet(petNo, name, dOB, species, breed, color, clinicNo, ownerNo)
      Examination(examNo, chiefComplient, description, dateSeen, staffNo, petNo)

b.)
1. Flatten rows in the table → already flattened, so the model is at least in 1NF
2. Identify functional dependencies

      clinicNo → clinicName, address, phoneNumber
      staffNo → name, address, phoneNumber, dOB, position, salary, clinicNo
      ownerNo → name, address, phoneNumnber
      petNo → name, dOB, species, breed, color, clinicNo, ownerNo
      examNo → chiefComplient, description, dateSeen, staffNo, petNo

3. 1NF → 2NF: Remove all partial dependencies

      There are no partial dependencies in our relations, so the model is at least in 2NF

4. 2NF → 3NF: Remove all transitive dependencies

      There are no transitive dependencies in our relations, so the model is in 3NF

c.)
1. List all staff that work at the clinic on 3787 Thomas Ave:

      You would check that the Clinic.address = "3787 Thomas Ave" to acquire the clinicNo, then use the clinicNo foreign key in the staff relation to list all of the staff that work there.

2. List the owners names and names of all of their pets.

      You would select the Owner.name and Pet.name from the owner and pet relations, using the foreign key ownerNo in the pet relation to join the two.

3. List all examinations that were done on beagles in the past year.

   You would select all of the attributes in the examination relation, from the examination and pet relations. You would join the relations using the foreign key petNo in the examination relation. You would also check that Examination.dateSeen >= a year ago today (Nov 17, 2021 in this case) and that Pet.species = "Beagle"

4. List all of the owners that have the first name "Cameron"

   You would list all of the attributes in the Owner relation, checking that the owner's name starts with "Cameron"

5. List the staff member's name who manages the branch with the phone number 123-456-7890

   You would list the name in the staff relation, checking that Staff.position = "Manager", that Clinic.phoneNumber = "123-456-7890", and join the two relations using the foreign key clinicNo in the Staff relation

d.)

1. Primary key constraints:
   Clinic(clinicNo) must be unique, can't be null
   Staff(staffNo) must be unique, can't be null
   Owner(ownerNo) must be unique, can't be null
   Pet(petNo) must be unique, can't be null
   Exam(examNo) must be unique, can't be null

2. Referential integrity/foreign key constraints
   Staff(clinicNo references Clinic) null on delete, cascade on update - must reference a value in the parent relation if not null
   Pet(clinicNo references Clinic) null on delete, cascade on update - must reference a value in the parent relation if not null
   Pet(ownerNo references Owner) null on delete, cascade on update - must reference a value in the parent relation if not null
   Examination(staffNo references Staff) null on delete, cascade on update - must reference a value in the parent relation if not null
   Examination(petNo references Pet) null on delete, cascade on update - must reference a value in the parent relation if not null

3. Alternate key constraints
   Clinic(address) must be unique, can't be null
   Clinic(phoneNo) must be unique, can't be null

4. Required data
   All primary keys are required
   Clinic(clinicName, address, phoneNumber)
   Staff(sName, position, clinicNo)
   Owner(name)
   Pet(name, clinicNo, ownerNo)
   Examination(staffNo, petNo)

5. Attribute domain constants
   Clinic(clinicNo) must be a letter a-z followed by 2 numbers
   Clinic(phoneNumber) int length 10
   Staff(staffNo) must be a letter a-z followed by 2 numbers
   Staff(dOB) varchar formatted ##/##/####
   Staff(phoneNumber) int length 10
   Owner(ownerNo) must be a letter a-z followed by 2 numbers
   Owner(phoneNumber) int length 10
   Pet(petNo) must be a letter a-z followed by 2 numbers
   Pet(dOB) varchar formatted ##/##/####
   Examination(examNo) must be a letter a-z followed by 2 numbers
   Examination(dateSeen) varchar formatted ##/##/####

6. General Constraints
   All date attributes (Staff(dOB), Pet(dOB), Examination(dateSeen) must not be greater than the current date

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e.)

Clinic
clinicNo (PK)
clinicName
address
phoneNumber

Staff
staffNo (PK)
name
address
phoneNumber
dOB
position
salary
clinicNo (FK)

Clinic —1..1— Has —1..*— Staff

Clinic —0..1— Manages —1..1— Staff

Clinic 1..1 — Registers — 0..* Pet

Staff 1..1 — Performs — 0..* Examination

Pet
petNo (PK)
name
dOB
species
breed
color
ownerNo (FK)
clinicNo (FK)

Examination
examNo (PK)
chiefComplient
description
dateSeen
actionsTaken
staffNo (FK)
petNo (FK)

Pet 1..1 — Undergoes — 0..* Examination

Pet 1..* — Owns — 1..1 Owner

Owner
ownerNo (PK)
name
address
phoneNumber