

Part 1: Conceptual Data Model

Main Entity Types:

Clinic: Represents the physical location where pet care services are provided.

Staff: Refers to individuals employed by Pawsome Pets to manage clinics and provide veterinary services.

Pet Owner: Represents individuals who register their pets for care and services at Pawsome Pets clinics.

Pet: Refers to the animals owned by pet owners and registered for care at Pawsome Pets clinics.

Examination: Represents the diagnostic procedures and treatments performed on pets during their visit to the clinic.

Main Relationship Types:

Clinic is Managed by Staff: Each clinic is managed by one staff member responsible for overseeing operations.

Staff Works at Clinic: Staff members are assigned to work at specific clinics to provide veterinary services.

Owner Registers Pet at Clinic: Pet owners can register one or more pets at a clinic for medical care and services.

Pet is Registered at Clinic: Each pet is registered at one clinic for ongoing care and treatment.

Pet Undergoes Examination: Pets undergo one or more examinations conducted by staff members during their visit to the clinic.

Examination is Performed by Staff: Each examination is performed by one staff member who conducts diagnostic procedures and treatments.

Multiplicity Constraints:

Clinic is Managed by Staff: One-to-One relationship (1:1) - Each clinic is managed by one staff member.

Staff Works at Clinic: One-to-One relationship (1:1) - Each staff member works at one clinic.

Owner Registers Pet at Clinic: One-to-Many relationship (1:M) - An owner can register one or more pets at a clinic.

Pet is Registered at Clinic: One-to-One relationship (1:1) - Each pet is registered at one clinic.

Pet Undergoes Examination: One-to-Many relationship (1:M) - A pet can undergo one or more examinations.

Examination is Performed by Staff: One-to-One relationship (1:1) - Each examination is performed by one staff member.

Identified Attributes:

Clinic: clinicNo, clinic name, address, telephone number

Staff: staffNo, name, address, telephone number, DOB, position, salary

Pet Owner: ownerNo, name, address, telephone number

Pet: petNo, name, DOB, animal species, breed, color

Examination: examNo, chief complaint, description, date seen, actions taken

Candidate and Primary Key Attributes:

Clinic: candidate key is clinicNo, primary key is clinicNo

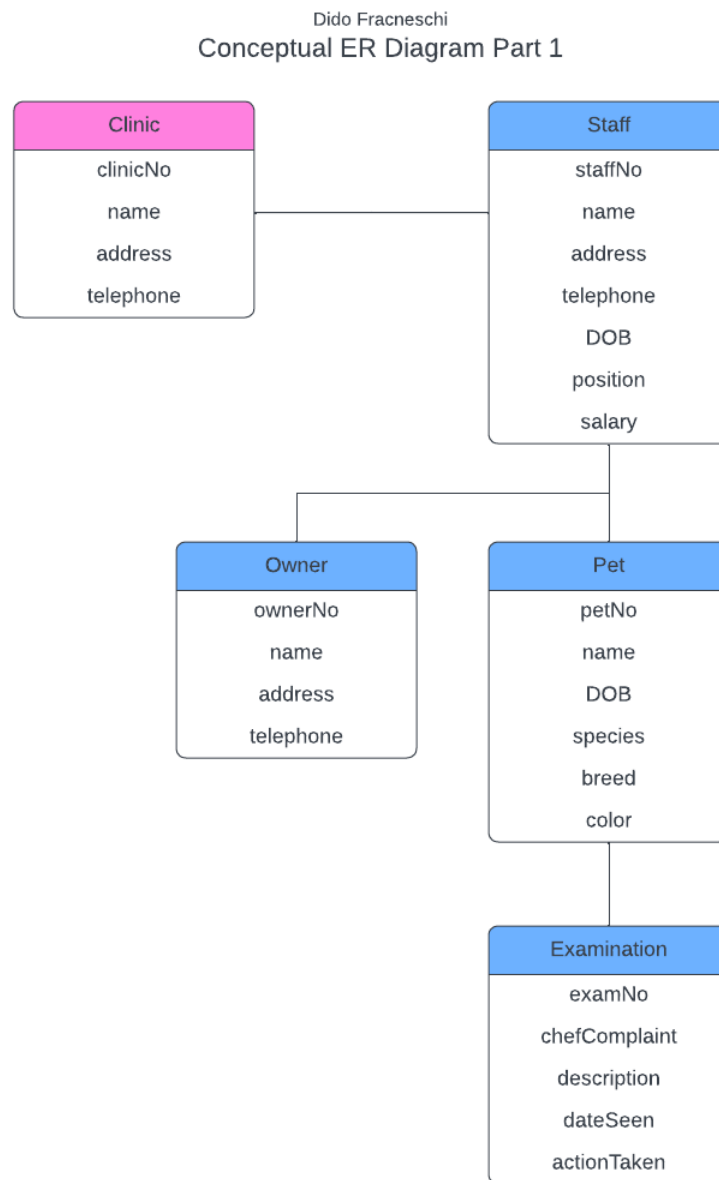
Staff: candidate key is staffNo, primary key is staffNo

Pet Owner: candidate key is ownerNo, primary key is ownerNo

Pet: candidate key is petNo, primary key is petNo

Examination: candidate key is examNo, primary key is examNo

E-R Diagram for Conceptual Level (No FKs as Attributes):



This proposal outlines the conceptual data model for the Pawsome Pets database project, including main entity types, relationship types, multiplicity constraints, identified attributes, candidate and primary key attributes, and an E-R diagram for the conceptual level. The subsequent parts of the project will involve developing a logical data model, translating it for the Oracle Enterprise DBMS, and implementing the database system.

Part 2: Logical Data Model

Derived Relations:

Clinic: (clinicNo PK, name, address, telephone, staffNo FK)

Staff: (staffNo PK, name, address, telephone, DOB, position, salary, clinicNo FK)

Owner: (ownerNo PK, name, address, telephone)

Pet: (petNo PK, name, DOB, species, breed, color, ownerNo FK)

Examination: (examNo PK, chiefComplaint, description, dateSeen, actionsTaken, staffNo FK, petNo FK)

Normalization to 3NF:

First Normal Form (1NF): Each relation already has a primary key, and attributes are atomic.

Second Normal Form (2NF): Each non-key attribute is dependent on the entire primary key, satisfying 2NF.

Third Normal Form (3NF): Each non-key attribute is dependent only on the primary key, satisfying 3NF.

Validation Against User Transactions:

The logical model will be validated against user transactions to ensure functionality and performance, including:

Adding, updating, and deleting records for clinics, staff members, owners, pets, and examinations.

Querying for information based on various criteria such as clinic name, staff member name, and pet species.

Integrity Constraints:

Primary Key Constraints: Each relation has a primary key attribute.

Referential Integrity/Foreign Key Constraints: clinicNo, staffNo, ownerNo, and petNo attributes are foreign keys.

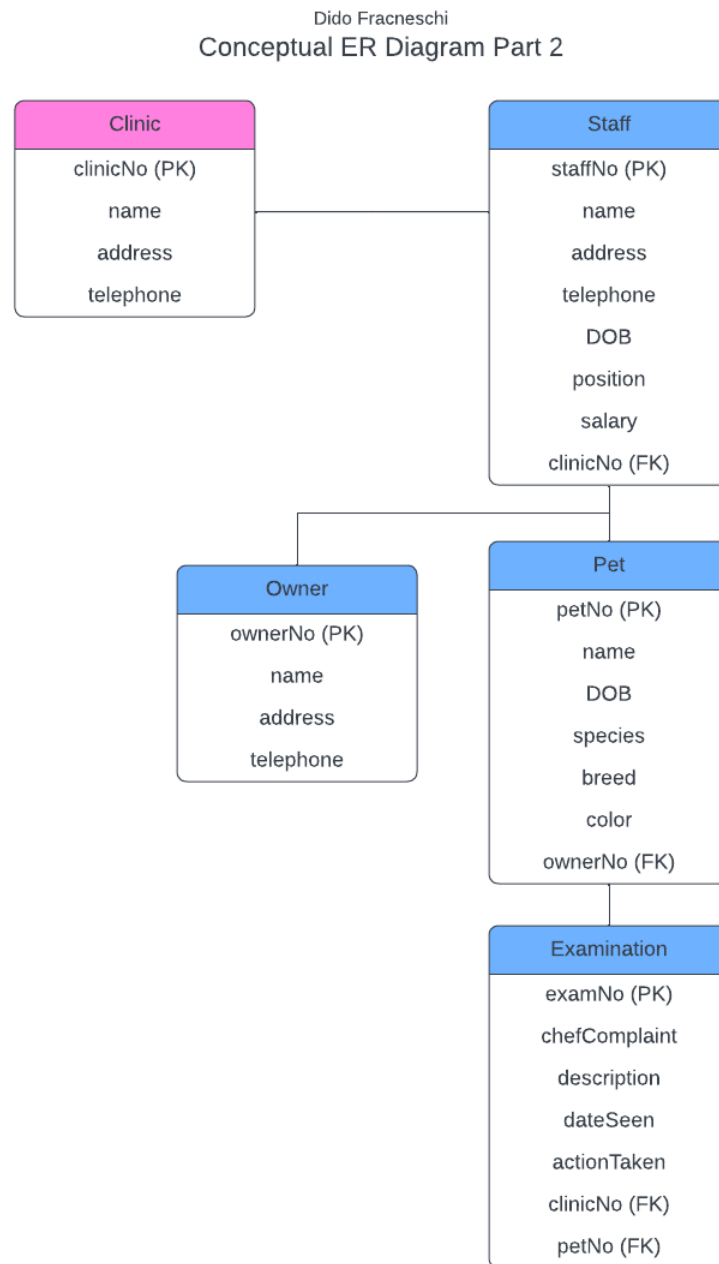
Required Data: Attributes such as clinic name, telephone, staff name, position, owner name, address, petNo, species, examination date seen, and actions taken must have non-null values.

Attribute Domain Constraints: Staff salary must be a positive integer, and pet DOB must be a valid date.

General Constraints:

There are no general constraints specified for the logical data model.

E-R Diagram for Logical Level (With FKs as Attributes):



This section outlines the logical data model for the Pawsome Pets database project, including derived relations, normalization to 3NF, validation against user transactions, integrity constraints, and an E-R diagram for the logical level. The next step will involve translating the logical data model for the Oracle Enterprise DBMS.