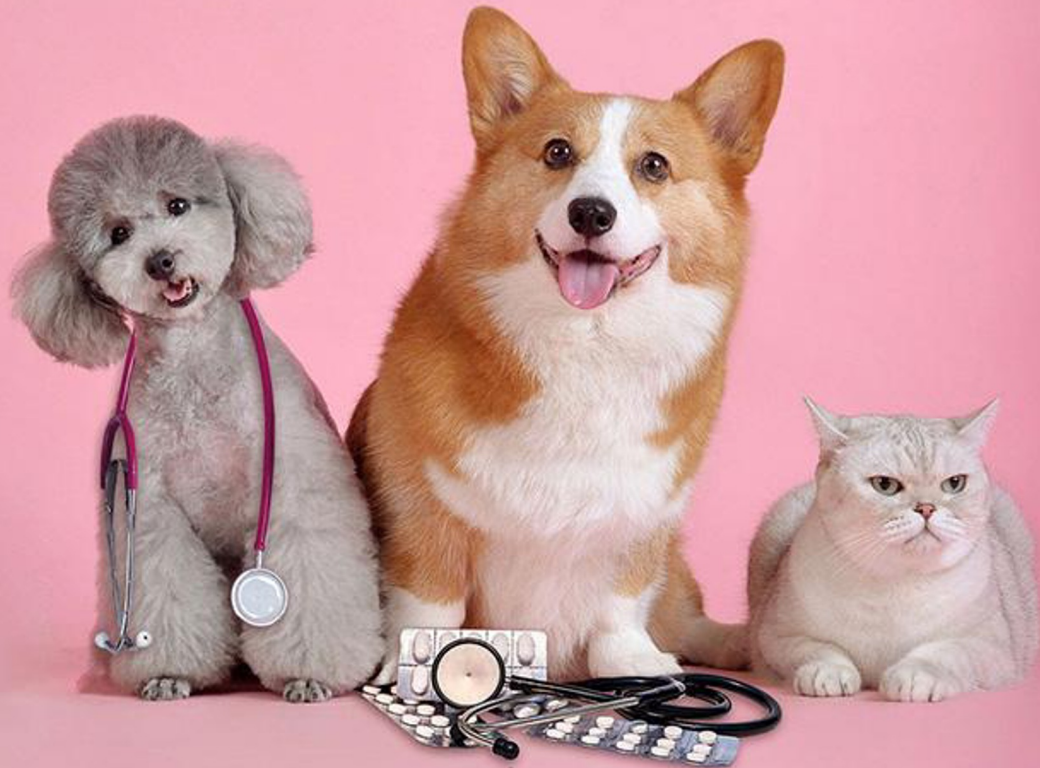




Happy Pets Hospital

Ewa, Jasmine, Vlada, Urvaksh, Andres

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BACKGROUND & SYSTEMS ANALYSIS



E-R MODEL CREATION

E-R Diagram, Multiplicities



RELATIONAL MODEL

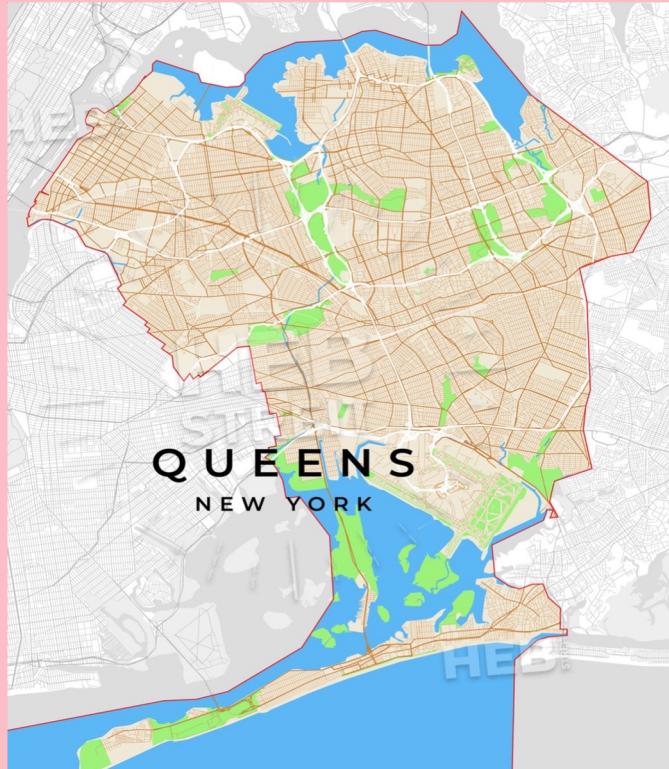
Relational Model, Normalization Process, Normalized Model



DATABASE IMPLEMENTATION

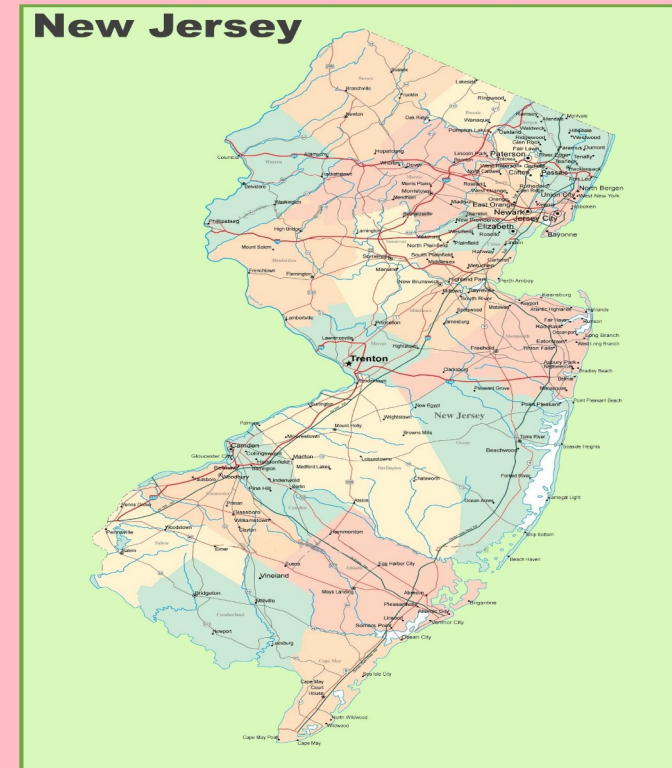
Creating Datasets, Importing into Access, Using SQL, Forms

Happy Pets Locations



Queens, NY

For over 20 years, Happy Pets Hospital have served in Forest Hills Queens



South Bound Brook, NJ

The newest location will expand Happy Pets Hospital to NJ

Systems Analysis



Clinic Services: Dogs, Cats, Birds, and Rabbits



Two locations: Queens and New Jersey



Operating for over 20 years



Switching from paper to digital record keeping



There is a need for a database to track records and data



A database will ensure the clinics keep providing the best service for pets

Entities



Veterinary Clinic

- Branch
- Staff
- Appointments
- Examinations
- Animal
- Pet Owners
- Invoices
- Medication
- Pet Treatments

Multiplicities



One member of **Staff** can be employed at 1 and only 1 **Branch**
One **Branch** may employ 1 or more members of **Staff**



One member of **Staff** can process 1 or many **Invoices**
One **Invoice** is processed by 1 and only 1 member of **Staff**



One **Invoice** is billed to 1 and only 1 **Pet Owner**
One **Pet Owner** can pay 0 or many **Invoices**



One **Pet Owner** can own 1 or many **Animals**
One **Animal** is owned by 1 and only 1 **Pet Owner**



One **Animal** can have 1 or many **Examinations**
One **Examination** is performed on 1 or many **Animals**



One **Examination** can prescribe 0 or many **Pet Treatments**
One **Pet Treatment** is prescribed by 1 and only 1 **Examination**

One **Pet Treatment** may include 1 or many **Medications**
One **Medication** may be included in 1 **Pet Treatment**



One **Examination** must have 1 and only 1 **Invoice**
One **Invoice** can be billed to 1 or many **Examinations**



One **Pet Treatment** must have 1 or many **Invoices**
One **Invoice** can include 0 or many **Pet Treatments**



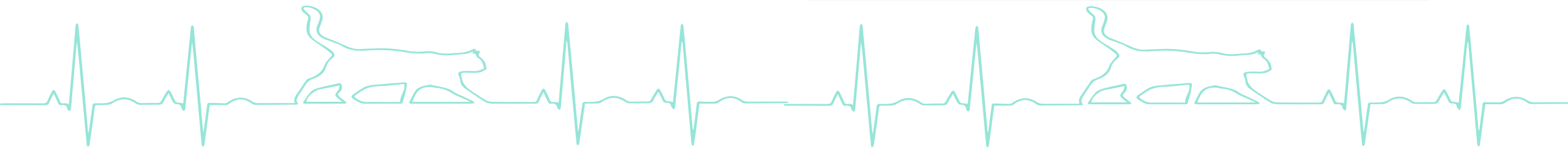
One **Pet Owner** can schedule 0 or many **Appointments**
One **Appointment** can be scheduled by 0 or 1 **Pet Owner**



One member of **Staff** can schedule 0 or many **Appointments**
One **Appointment** can be scheduled by 0 or 1 member of **Staff**



One member of **Staff** can perform 0 or many **Examinations**
One **Examination** is performed by 1 and only one **Staff**



Relational Model

Staff (EmployeeID, BranchID(fk), FirstName, LastName, Street, City, State, StaffZipCode, PhoneNumber, Position, Salary))

Branch (BranchID, PhoneNumber, Street, City, State, BranchZipCode)

Animal (AnimalID, OwnerID(fk), Name, Type, DateofBirth, DateRegistered, Gender, Height, Weight)

Pet Owners (OwnerID, FirstName, LastName, Street, City, State, OwnerZipCode, Email, PhoneNumber, InsuranceName, InsuranceType)

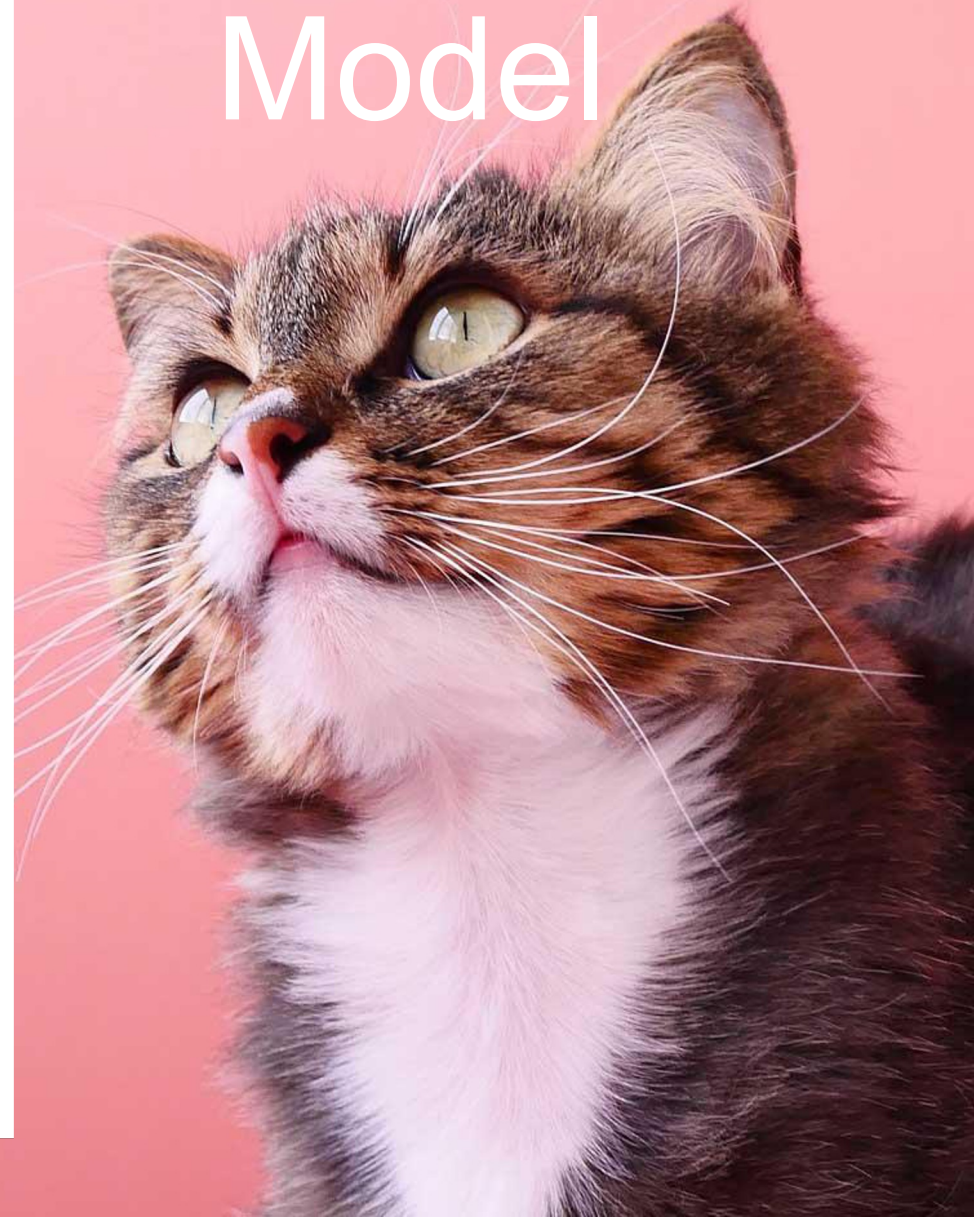
Appointments (AppointmentID, OwnerID(fk), AnimalID(fk), EmployeeID(fk), AppointmentDate, AppointmentTime, Reason)

Invoices (InvoiceID, OwnerID(fk), EmployeeID(fk), InvoiceDate, InvoiceAmount)

Examinations (ExaminationID, EmployeeID(fk), AnimalID(fk), InvoiceID(fk), ExaminationDate, ExaminationTime, Comments, Diagnosis)

Pet Treatments (TreatmentID, ExaminationID(fk), MedicationID(fk), AnimalID(fk), Description)

Medication (MedicationID, MedicationName, MedicationType, MedicationCost)



Normalization Process

Staff (EmployeeID, BranchID (fk),
FirstName, LastName, Street,
City, State, StaffZipCode,
PhoneNumber, Position, Salary)

Key: EmployeeID

Functional Dependency 1:

EmployeeID → FirstName, LastName, Street, City, State, StaffZipCode, Country, PhoneNumber, Position, Salary, BranchID

Functional Dependency 2:

StaffZipCode → City, State

Functional Dependency 3:

Position → Salary

Normalized Relations:

Staff_Info (EmployeeID, BranchID(fk),
Position(fk), StaffZipCode(fk), FirstName,
LastName, Street, PhoneNumber)

StaffZip (StaffZipCode, City, State)

Job Description (Position, Salary)

Branch (BranchID,
PhoneNumber, Street, City,
State, BranchZipCode)

Key: BranchID

Functional Dependency 1:

BranchID → PhoneNumber, Street, City, State, BranchZipCode

Functional Dependency 2:

BranchZipCode → City, State

Normalized Relations:

Branch_Info (BranchID,
Zipcode(fk), PhoneNumber, Street)

BranchZip (BranchZipCode, City,
State)

Pet Owners (OwnerID, FirstName,
LastName, Street, City, State,
OwnerZipCode, Email, PhoneNumber,
InsuranceName, InsuranceType)

Key: OwnerID

Functional Dependency 1:

OwnerID → FirstName, LastName, Street, OwnerZipCode, City, State, Email, PhoneNumber, Insurance

Functional Dependency 2:

InsuranceName → InsuranceType

Functional Dependency 3:

OwnerZipCode → City, State

Normalized Relations:

Pet Owners_Info (OwnerID,
AnimalID(fk), InsuranceName(fk),
FirstName, LastName, Street,
ZipCode, Email, PhoneNumber)

Insurance (InsuranceName,
InsuranceType)

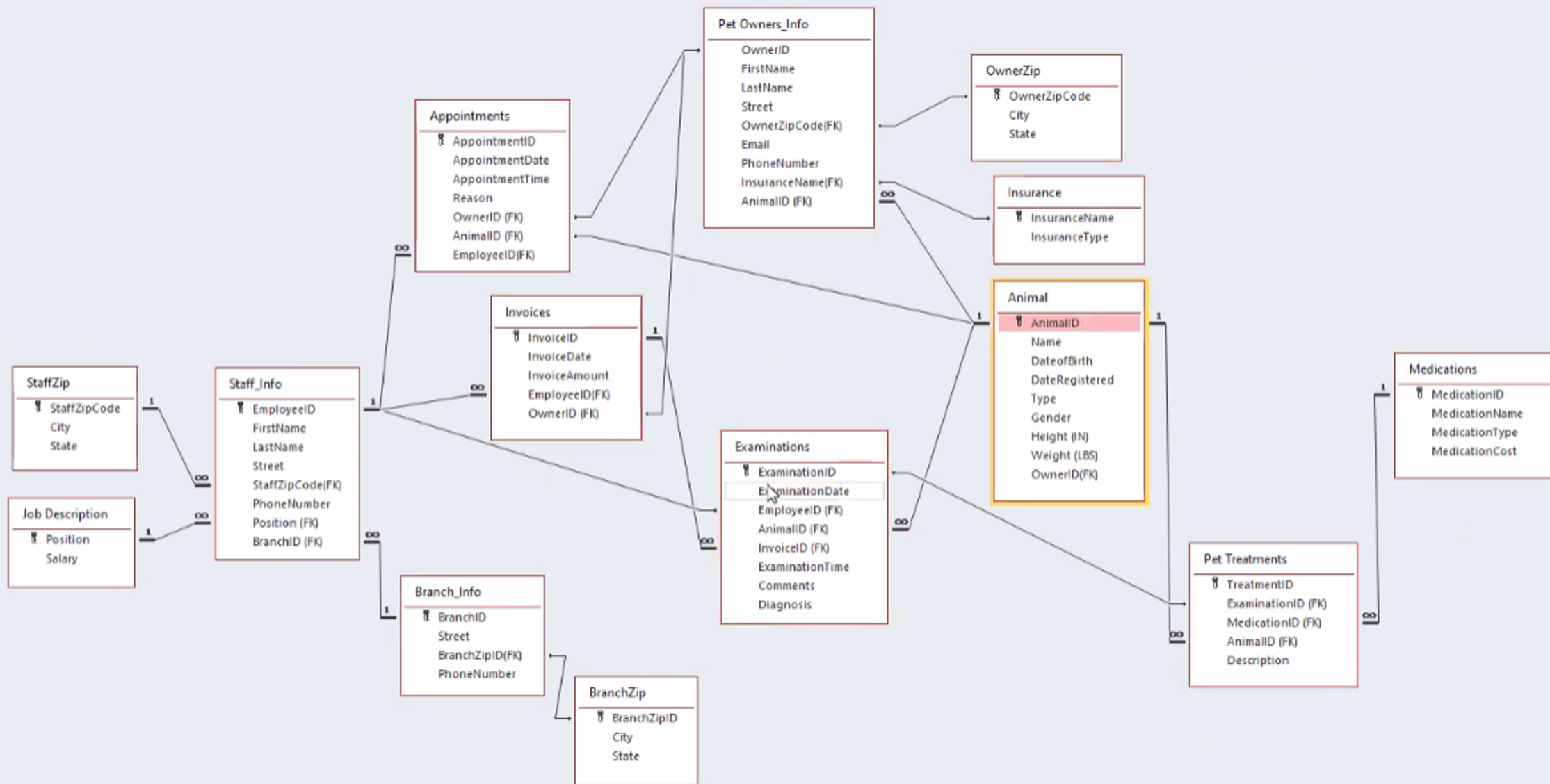
OwnerZip (OwnerZipCode, City,
State)

Remaining Relations

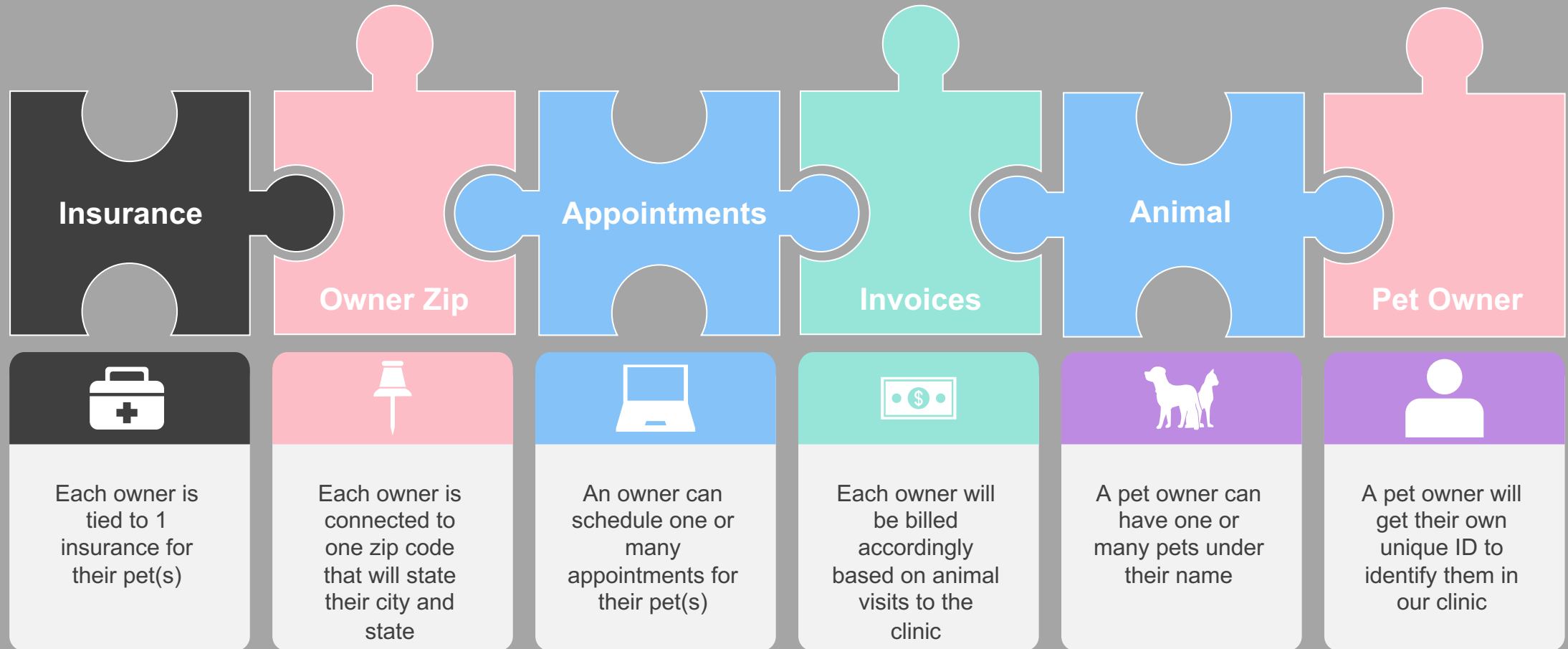
- Animal
- Appointments
- Invoices
- Examinations
- Pet Treatments
- Medication...

are already normalized!



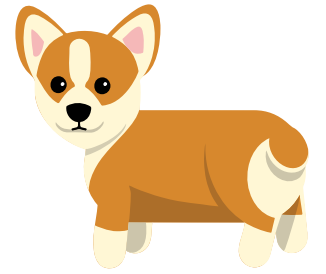


Pet Owner Relationships in Access





DDL SQL Queries



Staff_Info Table

```
CREATE TABLE Staff_Info
(  
    EmployeeID  
    VARCHAR(12) NOT NULL,  
    FirstName  
    VARCHAR(36),  
    LastName  
    VARCHAR(4),  
    CONSTRAINT  
    pk_EmployeeID  
    PRIMARY KEY  
    (EmployeeID)
```

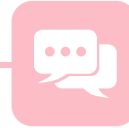
Query 1



Foreign Keys

```
ALTER TABLE Staff_Info  
    ADD CONSTRAINT  
    fk_Position  
    FOREIGN KEY  
    (Position)  
    REFERENCES  
    Position (Job Description)
```

Query 2



Inserting Data

```
INSERT INTO Position VALUES  
('Receptionist', 35000);  
INSERT INTO Position VALUES  
('Large Animal Surgeon',  
130000);  
INSERT INTO Position VALUES  
('Patient Care  
Assistant', 55000);  
INSERT INTO Position VALUES  
('Technician', 60000);  
INSERT INTO Position VALUES  
('Surgery Coordinator',  
85000);
```

Query 3

DML SQL Queries

```
SELECT
Pet_Owners_Info.OwnerID,
Pet_Owners_Info.FirstName,
Pet_Owners_Info.LastName,
Pet_Owners_Info.Street,
OwnerZip.City,
OwnerZip.State,
OwnerZip.OwnerZipCode

FROM Pet_Owners_Info

INNER JOIN OwnerZip

ON
Pet_Owners_Info.OwnerZipCo
de_FK =
OwnerZip.OwnerZipCode

WHERE State = 'NY'
```

Query 1

```
SELECT
Staff_Info.EmployeeID,
Staff_Info.FirstName,
Staff_Info.LastName,
Job_Description.Position,
Job_Description.Salary

FROM Staff_Info

LEFT JOIN Job_Description

ON Staff_Info.Position_FK
=
Job_Description.Position

WHERE Salary BETWEEN
70000 AND 100000

ORDER BY Salary DESC
```

Query 2

```
SELECT an.AnimalID,
an.Name, an.Type,
an.Gender,
a.AppointmentDate, `
a.AppointmentTime,
a.Reason

FROM Animal an

RIGHT JOIN Appointments
a

ON an.AnimalID =
a.AnimalID_FK

WHERE Reason =
'checkup'
```

Query 3

```
SELECT p.FirstName,
p.LastName, p.Email,
i.InvoiceDate,
i.InvoiceAmount

FROM Pet_Owners_Info p

LEFT JOIN Invoices i

ON p.OwnerID =
i.OwnerID_FK
```

Query 4

```

SELECT Pet_Owners_Info.FirstName, Pet_Owners_Info.LastName, Animal.Name AS Pet_Name, Animal.Type,
Examinations.Diagnosis, Medication.MedicationType, Pet_Treatments.Description

FROM Medication INNER JOIN

(((Animal INNER JOIN Pet_Owners_Info

ON Animal.AnimalID = Pet_Owners_Info.AnimalID_FK)

INNER JOIN Examinations

ON Animal.AnimalID = Examinations.AnimalID_FK)

INNER JOIN Pet_Treatments

ON Examinations.ExaminationID = Pet_Treatments.ExaminationID_FK AND Animal.AnimalID = Pet_Treatments.AnimalID_FK)

ON Medication.MedicationID = Pet_Treatments.MedicationID_FK;

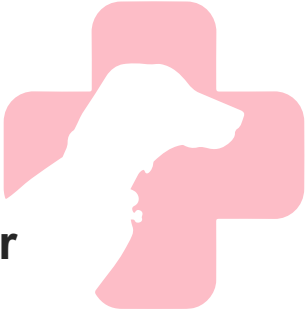
```

Query 5

	FirstName ▾	LastName ▾	Pet_Name ▾	Type ▾	Diagnosis ▾	MedicationType ▾	Description ▾
	Mickey	Larios	Bella	Rabbit	Fever	Antibiotic	Take by mouth once daily for 2 weeks
	Chris	Spivey	Max	Dog	Broken bone	Antibiotic	Take by mouth once daily for 2 months
	Rosanne	Lowrie	Teddy	Dog	UTI	Antibiotic	Take by mouth twice weekly for 4 months
	Evan	Torres	Charlie	Rabbit	Dry Nose	NSAID	Take by mouth twice daily for 3 weeks
	Ray	Honel	Oliver	Bird	Open Wound	Antibacterial	Take by mouth once daily for 2 months
	Damon	Macht	Luna	Cat	Tooth decay	Antibiotic	Take by mouth once daily for 2 months
	Amanda	Roy	Cooper	Cat	Fever	Antibiotic	Take by mouth once daily for 2 weeks
	Wesley	Wilkinson	Simba	Cat	Fleas	Antiparasitic	Apply topically. Do not bathe within 24 hours of application
	Tim	Chaney	Daisy	Dog	Open Wound	Antibacterial	Take by mouth twice daily for 2 weeks
	Brent	Woodley	Sadie	Dog	Fleas	Insecticide	Take by mouth once weekly for 3 months
	Kathy	Bloom	Buddy	Dog	Dry Nose	NSAID	Take by mouth once daily for 3 weeks
	Kim	Perkins	Bailey	Dog	Fleas	Antiparasitic	Apply topically. Do not bathe within 24 hours of application

Forms

Pet Owner



Animal Registration



Staff



Pet Owner Form

	Pet Owner Contact Information	
OwnerID	C0275	New
First Name	Joey	Save
Last Name	Cadrin	Close
Street	6632 L Ave	
Email	Joey.Cadrin@gmail.com	
Phone Number	718-241-4709	
Insurance Name	ASPCA	

Animal Registration Form

AnimalID	1025	Save
Name	Spike	Close
Date of Birth	06/20/2019	
Date Registered	10/27/2021	
Type	Dog	
Gender	F	
Height (Inches)	23	
Weight (Lbs)	60	
OwnerID	C0304	

Staff Form

	Staff	
EmployeeID	S001	New
FirstName	Darla	Save
LastName	Matthews	Close
Street	7763 North West Court	
StaffZipCode_FK	11372	
PhoneNumber	646-848-9232	
Position_FK	Receptionist	
BranchID_FK	B001	



THANK YOU