Summary about the entities:

* Customers: CustomerID, FirstName, LastName, Address, Email, Phone, DoB, PaymentInfo, JoinDate. CustomerID is the identifier.
* Pets: CustomerID, Pet#, NickName, Address, Email, Phone, Category, Species/Breed, Species/Breed Description, Gender, DoB, Notes. CustomerID and Pet# together as the identifier.
* Staff: EmployeeID, FirstName, LastName, SSN, Address, Email, Phone, DoB. EmployeeID is the identifier.
* Visit: VisitID, Date, Time, Customer, Pet, ServiceID, ServiceName, ServicePrice, ServiceDescription, Staff, Bill, Paid. VisitID is the identifier.

Their relationships are:

* A customer may have one or more (zero or more) pets; A pet must belong to one and only one (exactly one) customer.
* A staff may treat one or more pets (zero or more); and A pet may be familiar with one or more (zero or more) staff.
* A customer may have one or more (zero or more) visits; and each visit must be done by one and only one (exactly one) customer.
* A pet may have one or more (zero or more) visits; and each visit may involve one (zero or one) pet.
* A staff must be in charge of one or more (one or more) visits; and a visit must be charged by one and only one (exactly one) staff.
* A customer may be referred by one (zero or one) customer; and a customer may refer one or more (one or more) customers.
* A staff must have one and only one (exactly one) supervisor; A staff may supervise one or more (zero or more) staff.A diagram of a data flow

  AI-generated content may be incorrect.

Relational model

Customers(CustomerID, FirstName, LastName, Address, Email, Phone, DoB, PaymentInfo, JoinDate, ReferralId(fk))

Pets: (CustomerID(fk), Pet#, NickName, Address, Email, Phone, Category, Species, SpeciesDescription, Gender, DoB)

Staff(EmployeeID, FirstName, LastName, SSN, Address, Email, Phone, DoB, SupervisorId(fk))

Visit(\*VisitID, Date, Time, Customer, Pet, ServiceID, ServiceName, ServicePrice, ServiceDescription, Staff, Bill, Paid, CustomerId(fk), pet#(fk), EmployeeId(fk))

Staff\_pet(\*EmployeeId(fk), \*CustomerID(fk), \*Pet#(fk))

Normalization:

* Customers (CustomerID, FirstName, LastName, Address, Email, Phone, DoB, PaymentInfo, JoinDate, ReferredByCustomerID(fk)).
  + FD1: CustomerID → FirstName, LastName, Address, Email, Phone, DoB, PaymentInfo, JoinDate, ReferredByCustomerID
* Pets (CustomerID(fk), Pet#, NickName, Address, Email, Phone, Category, Species/Breed, Species/Breed Description, Gender, DoB, Notes).
  + FD1: CustomerID, Pet# → NickName, Address, Email, Phone, Category, Species/Breed, Species/Breed Description, Gender, DoB, Notes.
  + FD2: CustomerID → Address, Email, Phone
  + FD3: Species/Breed → Species/Breed Description
* Staff (EmployeeID, FirstName, LastName, SSN, Address, Email, Phone, DoB, SupervisorID(fk)).
  + FD1: EmployeeID  → FirstName, LastName, SSN, Address, Email, Phone, DoB, SupervisorID
* Visit (VisitID, Date, Time, CustomerID(fk), Pet(fk), ServiceID, ServiceName, ServicePrice, ServiceDescription, EmployeeID(fk), Bill, Paid).
  + FD1: VisitID → Date, Time, CustomerID, Pet, ServiceID, ServiceName, ServicePrice, ServiceDescription, EmployeeID, Bill, Paid
  + FD2: ServiceID  → ServiceName, ServicePrice, ServiceDescription.
* Pets\_Staff(CustomerID(fk), Pet#(fk),EmployeeID(fk))
  + There is no non-primary-key attribute.

2NF

* Pets1 (CustomerID(fk), Pet#, NickName, Category, Species/Breed, Species/Breed Description, Gender, DoB, Notes).
  + FD1: CustomerID, Pet# → NickName, Address, Email, Phone, Category, Species/Breed, Species/Breed Description, Gender, DoB, Notes.
  + FD3: Species/Breed → Species/Breed Description

3NF:

* Pets2 (CustomerID(fk), Pet#, NickName, Category, Species/Breed(fk), Gender, DoB, Notes).
  + FD1: CustomerID, Pet# → NickName, Address, Email, Phone, Category, Species/Breed, Species/Breed Description, Gender, DoB, Notes.
* Species(Species/Breed, Species/Breed Description)
  + FD3: Species/Breed → Species/Breed Description
* Visit2 (VisitID, Date, Time, CustomerID(fk), Pet(fk), ServiceID (fk), EmployeeID(fk), Bill, Paid).
  + FD1: VisitID → Date, Time, CustomerID, Pet, ServiceID, ServiceName, ServicePrice, ServiceDescription, EmployeeID, Bill, Paid
* Service(ServiceID, ServiceName, ServicePrice, ServiceDescription).
  + FD2: ServiceID  → ServiceName, ServicePrice, ServiceDescription.