2. Logical Model

Assumptions: Staff can only work at one clinic

a. Relations

Clinic (clinicNo (PK), cName, cAddress, cTelNo)
Staff (staffNo (PK), sName, sAddress, sTelNo, sDOB, sPosition, sSalary, clinicNo(FK), clinicNoManaged(FK))
Owner (ownerNo (PK), oName, oAddress, oTelNo, clinicNo(FK))
Pet (petNo (PK), pName, pDOB, pSpecies, pBreed, pColor, ownerNo (FK), clinicNo(FK))
Exam (examNo (PK), eComplaint, eDescription, eDate, eActionTaken, staffNo(FK), petNo(FK))

b. Normalization to 3NF

F.D. : clinicNo → cName, cAddress, cTelNo (PK)
staffNo → sName, sAddresss, sTelNo, sDOB, sPosition, sSalary, clinicNo (PK)
ownerNo → oName, oAddress, oTelNo, clinicNo (PK)
petNo → pName, pDOB, pSpecies, pBreed, pColor, ownerNo, clinicNo (PK)
examNo → eComplaint, eDescription, eDate, eTreatment, staffNo, petNo (PK)
Already in 3NF, there are no transitive or partial dependencies

c. User transactions

1) List all staff that works in the clinic "Caring Claws"
   Use the FK clinicNo in the Staff table to filter out the clinics that are not called "Caring Claws" in the Clinic table and print out staff name and staff no
2) How many dog pets are registered at clinic no 4?
   Count the number of petNo who's species attribute matches "Dog" and who's clinic no attribute matches the number 4
3) List the clinic that performed examn no 0001
   Filter examNo 4 and use staffNo (FK) in Exam table to reach the Staff table and use clinicNo (FK) to reach the clinic table and print out the clinic no and clinic name
4) What is the maximum salary in the "Animal House" clinic?
   Filter max salary in the staff table and use clinicNo (FK) to find where the clinic name matches "Animak House"
5) Close clinic no 5 and move all clients and staff to clinic no 0001
   Delete clinic no 5 and update the clinicNo in the tables Owner, Pet and Staff to clinic no 1

d. Integrity contraints

i) Clinic (clinicNo (PK)) cannot be null
   Staff (staffNo (PK)) cannot be null
   Owner (ownerNo (PK)) cannot be null Pet (petNo (PK))
   Exam (examNo (PK)) cannot be null

ii) Staff (clinicNo (FK) references Clinic table) set to null on delete and cascade on update
Owner (clinicNo (FK) references Clinic table) set to null on delete and cascade on update
Pet (ownerNo (FK) references Owner table) set to null on delete and cascade on update; (clinicNo (FK) references Clinic table) set to null on delete and cascade on update
Exam (petNo (FK) references Pet table) set to null on delete and cascade on update; (clinicNo (FK) references Clinic table) set to null on delete and cascade on update

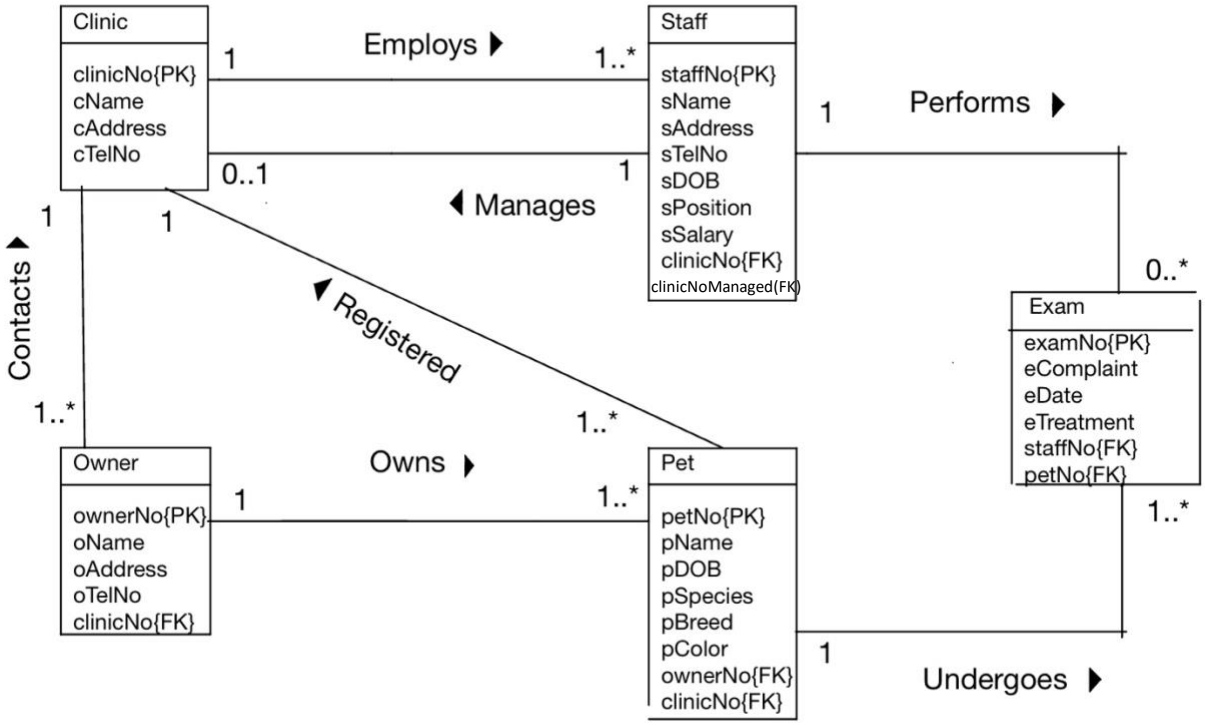
iii) NA

iv) Clinic (clinicNo (PK), cName)
Staff (staffNo (PK), sName, clinicNo(FK))
Owner (ownerNo (PK), clinicNo(FK))
Pet (petNo (PK), pName, ownerNo (FK), clinicNo(FK))
Exam (examNo (PK), staffNo(FK), petNo(FK))

v) clinicNo: 4 numbers
cName: string
cAddress: string
cTelNo: 10 numbers
staffNo: 4 numbers
sName: string
sAddress: string
sTelNo: 10 numbers
sDOB: date type
sPosition: string
sSalary: 7 numbers
ownerNo: 4 numbers
oName: string
oAddress: string
oTelNo: 10 numbers
petNo: 4 numbers
pName: string
pDOB: date type
pSpecies: string
pBreed: string
pColor: string
examNo: 4 numbers
eComplaint: string
eDescription: string
eDate: date type
eActionTaken: string

vi) sDOB < today's date
pDOB < today's date
eDate <= today's date

e.


Clinic
clinicNo{PK}
cName
cAddress
cTelNo
Employs
1
1..*
Staff
staffNo{PK}
sName
sAddress
sTelNo
sDOB
sPosition
sSalary
clinicNo{FK}
clinicNoManaged(FK)
Performs
1
0..1
1
Manages
1
1
Contacts
1
1..*
Registered
1..*
0..*
Exam
examNo{PK}
eComplaint
eDate
eTreatment
staffNo{FK}
petNo{FK}
1..*
Owner
ownerNo{PK}
oName
oAddress
oTelNo
clinicNo{FK}
Owns
1
1..*
Pet
petNo{PK}
pName
pDOB
pSpecies
pBreed
pColor
ownerNo{FK}
clinicNo{FK}
1
Undergoes