Animal Rescue Databook

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Part 1: Database Narrative

Database Description:

The Animal Rescue Database is created to assist the rescue organization in collecting, storing, and maintaining information regarding the various bodies that are involved in the animal rescue process. This database can be used by the rescue staff to manage information stored in the 14 tables relating to pets, breeds, vets, clinics, vet appointments, owners, pet adoptions, fosters, foster assignments, staffs, salaries, invoices, donators, and donations.

The PET table allows the staff to enter the details of new pets or edit the existing pet details. Year-end summary report of how the rescue is doing can be generated. They can find the number of new pets rescued each year, the number of pets they managed to find homes or foster homes, the number of pets which passed away in their care. They can answer questions like how many pets are left unadopted each year, whether senior pets have a disadvantage when it comes to adoption etc.

The BREED table provides further details of each pet such as the pet's breed (poodle, Siamese cat, etc), type (dog, cat, frog etc), vertebrate group (mammal, bird, amphibian, reptile, or fish), life expectancy of each pet, its dietary habits, and qualities etc. The staff will be able to get a summary report for each breed such as the average number of poodles or pugs rescued in a year, the number of pets which died before completing its life expectancy, the breed that is most abandoned, etc. The rescue staff can use this information to plan accordingly. They can find the most neglected cases of pets which are usually senior pets, a pet of a particular breed, pets with disability or complex medical condition and using this information they can figure out a way to facilitate their adoption or fostering process. If they find out the most neglected cases which are seldom adopted or fostered, they can try to bring awareness to the desperate situation of these neglected animals by collaborating with social media influencers to promote the adoption of neglected pets, they can give discounts on adoption fees for neglected pets, they can provide paid fostering opportunities in caring for these neglected pets etc.

The VET, CLINIC and APPOINTMENT tables provide details about the veterinary doctors, their clinic details such as its locations and facilities, and the medical appointment details of each pet. The staff can add a new record to the APPOINTMENT table when a sick pet gets treatment from a vet. The

staff can also use these tables to get the medical history of the pets which can be given to the potential adopters so that they can choose what is the right pet for them. This is done because some pets will require extensive attention and some adopters might not be able to spend that much time to care for these pets or lack the necessary knowledge about a particular medical condition needed to raise the pet. All these table combined allows querying of details such as the most frequent illness which the pets in the rescue are affected with, the common disease in each breed, the most frequented vet in each specialization, recurring illness in a particular pet, the most common drug recommended etc.

The OWNER, FOSTER and STAFF table provide details of people who will be taking care of the pets. Whenever a person adopts a pet, his detail will be added to the ADOPTION table which links him to the pet, so that the rescue staff can keep track of their pets. The owner table details such as the number of kids he/she has can be used to find a kid-friendly pet for their family. The FOSTER table provides details of the paid or voluntary, past, present, or future fosters. Details such as the medical knowledge and number of free hours per day of the foster can help the rescue staff find a suitable foster pet for them. The ASSIGNMENT table helps the rescue staff keep track of who fosters which pet, how many pets, for how many weeks etc. The STAFF provides details of the rescue staff such as their name, contact details, address, their designation (groomer, caretaker, humane investigator etc), whether they are paid or voluntary workers etc. The details in the FOSTER and ASSIGNMENT table can be used to identify the foster who volunteered the greatest number of days, so that they can be given prizes, as a way of appreciating their effort, dedication, and kindness. It will also encourage others to start fostering animals.

The DONATOR table gives information about different organizations that donates to the rescue. The DONATION table keeps an account of all the donations made to the rescue. It keeps track of the amount of money donated and the date of the donation. The SALARY table is used to maintain information about the payment details of the employees of the animal rescue. The INVOICE table houses the generated bills for all the expenses of the rescue. This includes the veterinary treatment costs of animals, salary of the rescue staff, paid fosters costs, pet foods costs, rent, grooming costs, photographer costs, website maintenance costs, etc. The INVOICE table, together with the DONATION table can be used to see how much of the donations were used up, how much donated money remains, what is the major or common expense, which pet is expensive to raise etc. The INVOICE table together with the DONATION table can be used to audit the expenditure of the rescue business. This can be done to make sure that all portions of the donations are accounted for and that none of the money is being stolen or misused.

In addition to the rescue staff, the public can access the pet details, their breed information, and their medical history. The public also has access to the information regarding the amount of donations the rescue receives each year and the details of these organizations. The Donating Organizations has access to the report with details of the disbursement of the donation money.

Data Dictionary:

TABLE NAME	ATTRIBUTE NAME	CONTENTS	TYPE	FORMAT	RANGE	REQUIRED	PK OR FK	FK REFERENCED TABLE
PET	PET_NUM	Pet identification number	CHAR (5)	99999	10000-99999	Y	PK	
	PET_NAME	Pet name	VARCHAR (40)	Xxxxxxx		Y		
	BREED_NUM	Breed id number	CHAR (5)	99999	10000-99999		FK	BREED
	PET_DOB	Pet date of birth	DATE	yyyy-mm-dd				
	PET_DOR	Pet date of rescue	DATE	yyyy-mm-dd				
	PET_DOP	Pet date of passing	DATE	yyyy-mm-dd				
BREED	BREED_NUM	Breed id number	CHAR (5)	99999	10000-99999	Y	PK	
	BREED_NAME	Breed name	VARCHAR (40)	Xxxxxxx		Y		
	BREED_TYPE	Breed type	VARCHAR (40)	Xxxxxxx				
	BREED_VERT_GRP	Breed vertebrate group	VARCHAR (40)	Xxxxxxx				
	BREED_DIET_CLASS	Breed dietary class	VARCHAR (40)	Xxxxxxx				
	BREED_LIFE_EXP	Breed life expectancy	INT	99				
	BREED_QUALITIES	Breed qualities	VARCHAR (100)	Xxxxxxx				

TABLE NAME	ATTRIBUTE NAME	CONTENTS	TYPE	FORMAT	RANGE	REQUIRED	PK OR FK	FK REFERENCED TABLE
VET	VET_NUM	Vet id number	CHAR (5)	99999	10000-99999	Y	PK	
	VET_FNAME	Vet first name	VARCHAR (40)	Xxxxxxx		Y		
	VET_LNAME	Vet last name	VARCHAR (40)	Xxxxxxx		Y		
	VET_SPECIALIZATION	Vet specialization	VARCHAR (40)	Xxxxxxx				
	VET_BROAD_CERT	Vet board certification	VARCHAR (40)	Xxxxxxx				
	VET_NUM_PRACT_YRS	Vet number of years in practice	INT	99	0-99			
	VET_CONTACT_NUM	Vet contact number	CHAR (12)	999-999-9999				
	CLI_NUM	Clinic id number	CHAR (5)	99999	10000-99999		FK	CLINIC
	VET_WORK_HRS	Vet working hours	VARCHAR (40)	Xxxxxxx				
CLINIC	CLI_NUM	Clinic id number	CHAR (5)	99999	10000-99999	Y	PK	
	CLI_NAME	Clinic name	VARCHAR (40)	Xxxxxxx		Y		
	CLI_ADD_STREET	Clinic street	VARCHAR (40)	Xxxxxxx				
	CLI_ADD_CITY	Clinic city	VARCHAR (25)	Xxxxxxx				
	CLI_ADD_STATE	Clinic state	CHAR (2)	XX				

TABLE NAME	ATTRIBUTE NAME	CONTENTS	TYPE	FORMAT	RANGE	REQUIRED	PK OR FK	FK REFERENCED TABLE
	CLI_ADD_ZIP	Clinic zip code	CHAR (5)	99999				
	CLI_CONTACT_NUM	Clinic contact number	CHAR (12)	999-999-9999				
	CLI_NUM_VETS	Clinic number of vets	INT	9999	0-9999			
	CLI_FACILITIES	Clinic facilities	VARCHAR (100)	Xxxxxxx				
APPOINTMENT	APP_NUM	Appointment serial number	CHAR (5)	99999	10000-99999	Y	PK	
	APP_DATE	Appointment date	DATE	yyyy-mm-dd		Y		
	PET_NUM	Pet id number	CHAR (5)	99999	10000-99999	Y	FK	PET
	VET_NUM	Vet id number	CHAR (5)	99999	10000-99999	Y	FK	VET
	APP_DIAGNOSIS	Appointment diagnosis	VARCHAR (100)	Xxxxxxx				
	APP_PRESCRIPTION	Appointment prescription	VARCHAR (100)	Xxxxxxx				
	INV_NUM	Invoice serial number	CHAR (5)	99999	10000-99999		FK	INVOICE
OWNER	OWN_NUM	Owner id number	CHAR (5)	99999	10000-99999	Y	PK	

TABLE NAME	ATTRIBUTE NAME	CONTENTS	TYPE	FORMAT	RANGE	REQUIRED	PK OR FK	FK REFERENCED TABLE
	OWN_FNAME	Owner first name	VARCHAR (40)	Xxxxxxx		Y		
	OWN_LNAME	Owner last name	VARCHAR (40)	Xxxxxxx		Y		
	OWN_CONTACT_NUM	Owner contact number	CHAR (12)	999-999-9999				
	OWN_ADD_STREET	Owner street	VARCHAR (40)	Xxxxxxx				
	OWN_ADD_CITY	Owner city	VARCHAR (25)	Xxxxxxx				
	OWN_ADD_STATE	Owner state	CHAR (2)	XX				
	OWN_ADD_ZIP	Owner zip code	CHAR (5)	99999				
	OWN_PROFESSION	Owner profession	VARCHAR (40)	Xxxxxxx				
	OWN_DOB	Owner date of birth	DATE	yyyy-mm-dd				
	OWN_NUM_PETS	Number of pets owner has	INT	99	0-99			
	OWN_NUM_KIDS	Number of kids owner has	INT	99	0-99			
	OWN_NUM_FREE_HRS	Number of free hours per day owner has	INT	99	0-24			
FOSTER	FOS_NUM	Foster id number	CHAR (5)	99999	10000-99999	Y	PK	
	FOS_FNAME	Foster first name	VARCHAR (40)	Xxxxxxx		Y		

TABLE NAME	ATTRIBUTE NAME	CONTENTS	TYPE	FORMAT	RANGE	REQUIRED	PK OR FK	FK REFERENCED TABLE
	FOS_LNAME	Foster last name	VARCHAR (40)	Xxxxxxx		Y		
	FOS_CONTACT_NUM	Foster contact number	CHAR (12)	999-999-9999				
	FOS_ADD_STREET	Foster street	VARCHAR (40)	Xxxxxxx				
	FOS _ADD_CITY	Foster city	VARCHAR (25)	Xxxxxxx				
	FOS _ADD_STATE	Foster state	CHAR (2)	XX				
	FOS _ADD_ZIP	Foster zip code	CHAR (5)	99999				
	FOS_PROFESSION	Foster profession	VARCHAR (40)	Xxxxxxx				
	FOS_DOB	Foster date of birth	DATE	yyyy-mm-dd				
	FOS_NUM_PETS	Number of pets the foster has	INT	99	0-99			
	FOS_NUM_FOS_PETS	Number of foster pets the foster has	INT	99	0-99			
	FOS_NUM_KIDS	Number of kids foster has	INT	99	0-99			
	FOS_MED_KNOW	Medical knowledge of foster	VARCHAR (100)	Xxxxxxx				
	FOS_NUM_FREE_HRS	Number of free hours per day foster has	INT	99	0-24			

TABLE NAME	ATTRIBUTE NAME	CONTENTS	TYPE	FORMAT	RANGE	REQUIRED	PK OR FK	FK REFERENCED TABLE
	FOR_PAID_VOL	Foster paid or voluntary work	CHAR (1)	X				
STAFF	STF_NUM	Staff id number	CHAR (5)	99999	10000-99999	Y	PK	
	STF_FNAME	Staff first name	VARCHAR (40)	Xxxxxxx		Y		
	STF_LNAME	Staff last name	VARCHAR (40)	Xxxxxxx		Y		
	STF _CONTACT_NUM	Staff contact number	CHAR (12)	999-999-9999				
	STF _ADD_STREET	Staff street	VARCHAR (40)	Xxxxxxx				
	STF _ADD_CITY	Staff city	VARCHAR (25)	Xxxxxxx				
	STF _ADD_STATE	Staff state	CHAR (2)	XX				
	STF _ADD_ZIP	Staff zip code	CHAR (5)	99999				
	STF_DOB	Staff date of birth	DATE	yyyy-mm-dd				
	STF_DESIGNATION	Staff designation	VARCHAR (40)	Xxxxxxx				
	STF_PAID_VOL	Staff paid or voluntary	CHAR (1)	X				
ADOPTION	ADOP_NUM	Adoption number	CHAR (5)	99999	10000-99999	Y	PK	
	ADOP_DATE	Adoption date	DATE	yyyy-mm-dd		Y		

TABLE NAME	ATTRIBUTE NAME	CONTENTS	TYPE	FORMAT	RANGE	REQUIRED	PK OR FK	FK REFERENCED TABLE
	PET_NUM	Pet id number	CHAR (5)	99999	10000-99999	Y	FK	PET
	OWN_NUM	Owner id number	CHAR (5)	99999	10000-99999	Y	FK	OWNER
	ADOP_FEE	Adoption fee	NUMERIC (6,2)	9999.99	0-999.99			
ASSIGNMENT	ASSI_NUM	Assignment serial number	CHAR (5)	99999	10000-99999	Y	PK	
	ASSI_DATE	Assignment date	DATE	yyyy-mm-dd		Y		
	PET_NUM	Pet id number	CHAR (5)	99999	10000-99999	Y	FK	PET
	FOS_NUM	Foster id number	CHAR (5)	99999	10000-99999	Y	FK	FOSTER
	ASSI_FUND	Assignment fund	NUMERIC (6,2)	9999.99	0-999.99			
	ASSI_NUM_DAYS	Assignment number of days	INT	999	0-999			
	INV_NUM	Invoice serial number	CHAR (5)	99999	10000-99999		FK	INVOICE

TABLE NAME	ATTRIBUTE NAME	CONTENTS	TYPE	FORMAT	RANGE	REQUIRED	PK OR FK	FK REFERENCED TABLE
DONATOR	DNR_NUM	Donator number	CHAR (5)	99999	10000-99999	Y	PK	
	DNR_ORG_NAME	Donator organization name	VARCHAR (40)	Xxxxxxx		Y		
	DNR_DIRECTOR	Donator director name	VARCHAR (40)	Xxxxxxx				
	DNR_LIASION	Donator liaison	VARCHAR (40)	Xxxxxxx				
	DNR_CONTACT_NUM	Contact number of donator	CHAR (12)	999-999-9999				
	DNR _ADD_STREET	Donator street	VARCHAR (40)	Xxxxxxx				
	DNR _ADD_CITY	Donator city	VARCHAR (25)	Xxxxxxx				
	DNR _ADD_STATE	Donator state	CHAR (2)	XX				
	DNR _ADD_ZIP	Staff zip code	CHAR (5)	99999				
	DNR_DOF	Donator date of founding	DATE	yyyy-mm-dd				
	DNR_NUM_RUN_YRS	Donator number of years running	INT	999	0-999			
DONATION	DON_NUM	Donation serial number	CHAR (5)	99999	10000-99999	Y	PK	

TABLE NAME	ATTRIBUTE NAME	CONTENTS	TYPE	FORMAT	RANGE	REQUIRED	PK OR FK	FK REFERENCED TABLE
	DON_DATE	Donation date	DATE	yyyy-mm-dd		Y		
	DNR_NUM	Donator id number	CHAR (5)	99999	10000-99999	Y	FK	DONATOR
	DON_AMOUNT	Donation amount	NUMERIC (6,2)	9999.99	0-99999.999			
INVOICE	INV_NUM	Invoice serial number	CHAR (5)	99999	10000-99999	Y	PK	
	INV_DATE	Invoice date	DATE	yyyy-mm-dd		Y		
	INV_AMOUNT	Invoice amount	NUMERIC (6,2)	9999.99	0-999.999			
	DON_NUM	Donation serial number	CHAR (5)	99999	10000-99999		FK	DONATION
	INV_REASON	Invoice reason	VARCHAR (40)	Xxxxxxx				
SALARY	SAL_NUM	Salary serial number	CHAR (5)	99999	10000-99999	Y	PK	
	SAL_DATE	Salary date	DATE	yyyy-mm-dd		Y		
	STF_NUM	Staff id number	CHAR (5)	99999	10000-99999	Y	FK	STAFF

TABLE NAME	ATTRIBUTE NAME	CONTENTS	TYPE	FORMAT	RANGE	REQUIRED	PK OR FK	FK REFERENCED TABLE
	SAL_AMOUNT	Salary amount	NUMERIC (6,2)	9999.99	0-9999.999			
	SAL_NUM_WORK_HRS	Salary number of hours worked	INT	999	0-999			
	INV_NUM	Invoice serial number	CHAR (5)	99999	10000-99999	Y	FK	INVOICE

Business rules:

1. One breed has zero or many pets. One pet belongs to one and only one breed.
2. One owner adopts zero or many pets. One pet is adopted by zero or many owners
3. One foster raises zero or many pets. One pet is raised by zero or many fosters
4. One clinic employs zero or many vets. One vet is employed by one and only one clinic
5. One vet treats zero or many pets. One pet is treated by zero or many vets.
6. One donator donates zero or many donations. One donation is donated by one and only one donator.
7. One donation is used by zero or many invoice. One invoice uses one and only one donation.
8. One appointment generates one and only one invoice. One invoice is generated by one and only one appointment
9. One assignment produces one and only one invoice. One invoice is produced by one and only one assignment.
10. One salary creates one and only one invoice. One invoice is created by one and only one salary.
11. One staff earns zero or many salaries. One salary is earned by one and only one staff.

Entity Relationship Model (ERM) Components:

ENTITY	RELATIONSHIP	CONNECTIVITY	ENTITY
BREED	has	1:M	PET
OWNER	adopts	M:N	PET
FOSTER	raises	M:N	PET
CLINIC	employs	1:M	VET
VET	treats	M:N	PET
DONATOR	donates	1:M	DONATION
DONATION	used by	1:M	INVOICE
APPOINTMENT	generates	1:1	INVOICE
ASSIGNMENT	produces	1:1	INVOICE
SALARY	creates	1:1	INVOICE

ENTITY	RELATIONSHIP	CONNECTIVITY	ENTITY
STAFF	earns	1:M	SALARY

Part 2: Entity Relationship Diagram

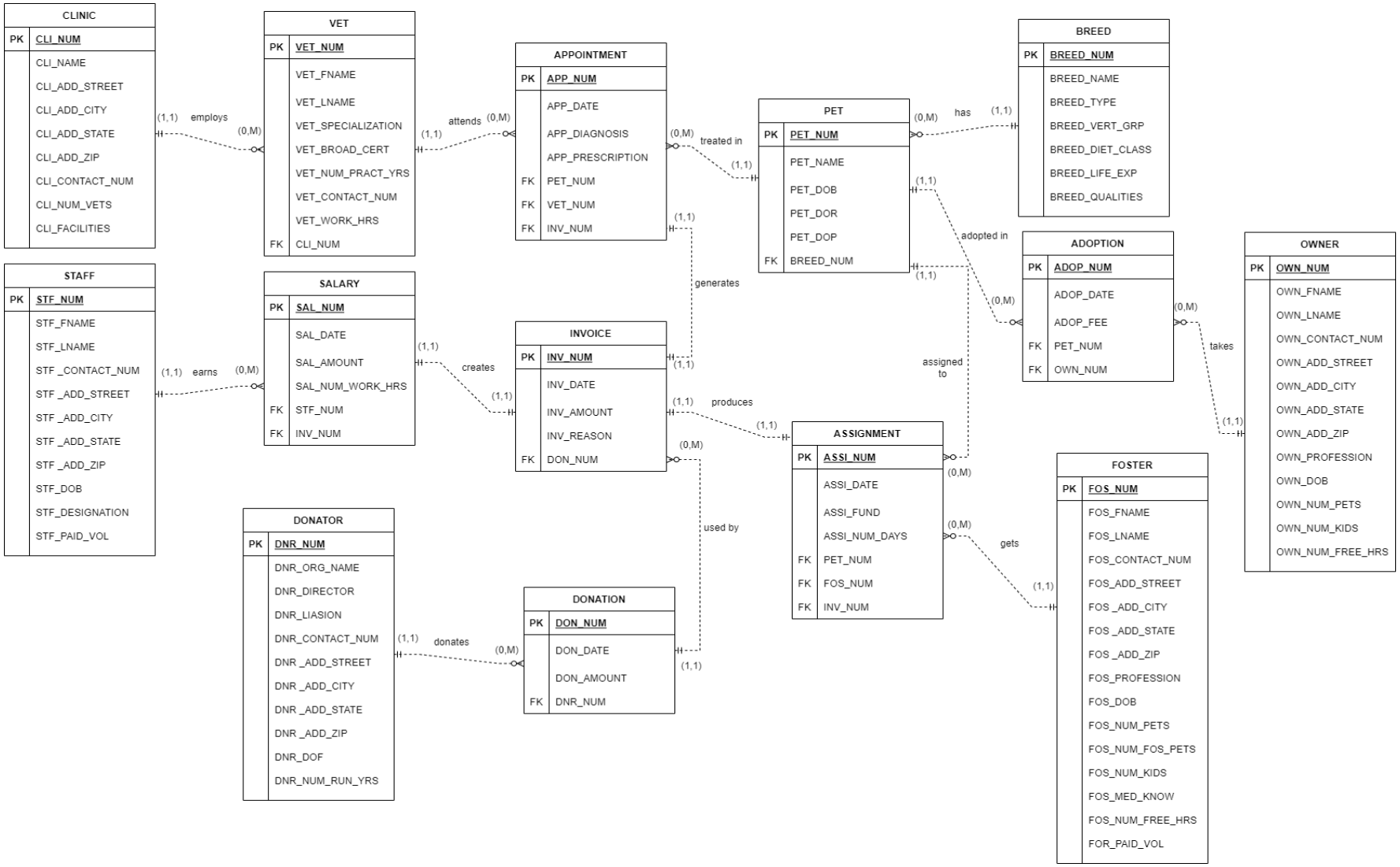
I. RELATIONAL SCHEMA

1. PET (**PET_NUM**, PET_NAME, PET_DOB, PET_DOR, PET_DOP, BREED_NUM)
2. BREED (**BREED_NUM**, BREED_NAME, BREED_TYPE, BREED_VERT_GRP, BREED_DIET_CLASS, BREED_LIFE_EXP, BREED_QUALITIES)
3. VET (**VET_NUM**, VET_FNAME, VET_LNAME, VET_SPECIALIZATION, VET_BROAD_CERT, VET_NUM_PRACT_YRS, VET_CONTACT_NUM, VET_WORK_HRS, CLI_NUM)
4. CLINIC (**CLI_NUM**, CLI_NAME, CLI_ADD_STREET, CLI_ADD_CITY, CLI_ADD_STATE, CLI_ADD_ZIP, CLI_CONTACT_NUM, CLI_NUM_VETS, CLI_FACILITIES)
5. APPOINTMENT (**APP_NUM**, APP_DATE, APP_DIAGNOSIS, APP_PRESCRIPTION, PET_NUM, VET_NUM, INV_NUM)
6. OWNER (**OWN_NUM**, OWN_FNAME, OWN_LNAME, OWN_CONTACT_NUM, OWN_ADD_STREET, OWN_ADD_CITY, OWN_ADD_STATE, OWN_ADD_ZIP, OWN_PROFESSION, OWN_DOB, OWN_NUM_PETS, OWN_NUM_KIDS, OWN_NUM_FREE_HRS)
7. FOSTER (**FOS_NUM**, FOS_FNAME, FOS_LNAME, FOS_CONTACT_NUM, FOS_ADD_STREET, FOS _ADD_CITY, FOS _ADD_STATE, FOS _ADD_ZIP, FOS_PROFESSION, FOS_DOB, FOS_NUM_PETS, FOS_NUM_FOS_PETS, FOS_NUM_KIDS, FOS_MED_KNOW, FOS_NUM_FREE_HRS, FOR_PAID_VOL)
8. STAFF (**STF_NUM**, STF_FNAME, STF_LNAME, STF _CONTACT_NUM, STF _ADD_STREET, STF _ADD_CITY, STF _ADD_STATE, STF _ADD_ZIP, STF_DOB, STF_DESIGNATION, STF_PAID_VOL)
9. ADOPTION (**ADOP_NUM**, ADOP_DATE, ADOP_FEE, PET_NUM, OWN_NUM)
10. ASSIGNMENT (**ASSI_NUM**, ASSI_DATE, ASSI_FUND, ASSI_NUM_DAYS, PET_NUM, FOS_NUM, INV_NUM)
11. DONATOR (**DNR_NUM**, DNR_ORG_NAME, DNR_DIRECTOR, DNR_LIASION, DNR_CONTACT_NUM, DNR _ADD_STREET, DNR _ADD_CITY, DNR _ADD_STATE, DNR _ADD_ZIP, DNR_DOF, DNR_NUM_RUN_YRS)
12. DONATION (**DON_NUM**, DON_DATE, DON_AMOUNT, DNR_NUM)

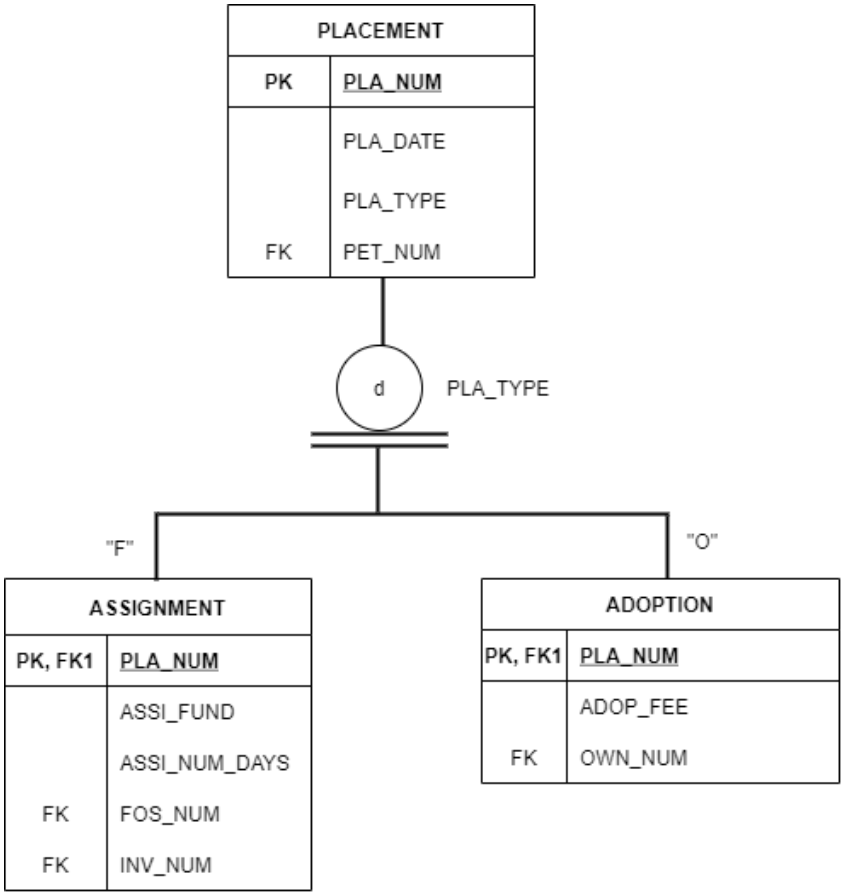
13. INVOICE (**INV_NUM**, INV_DATE, INV_AMOUNT, INV_REASON, DON_NUM)

14. SALARY (**SAL_NUM**, SAL_DATE, SAL_AMOUNT, SAL_NUM_WORK_HRS, STF_NUM, INV_NUM)

II. ENTITY RELATIONSHIP DIAGRAM USING CROW'S FOOT NOTATION



III. SUPERTYPE-SUBTYPE DIAGRAM USING CROW'S FOOT NOTATION



IV. NORMALIZATION

Normalization is the process in which the data in the database is organized in such a way that data redundancy, data inconsistency and data anomalies (insertion, deletion, and update anomalies) are reduced or eliminated, and data integrity is maintained. A table can be in different normal forms such as 1NF, 2NF, 3NF etc. Let us breakdown the process of converting the RESCUE table from 1NF to 3NF. The rescue table in 1NF will be split into 3 tables - APPOINTMENT, PET and VET to normalize it to 3NF.

First Normal Form

The table is in 1NF if:

- It has a primary key
- It has no repeating groups
- It has single valued attributes only

The RESCUE table has primary key RESC_APP_NUM, which can be used to uniquely identify a record in the table. It has no repeating groups, and it has single valued attributes only, thus making it a table in 1NF.

The RESCUE table has no partial dependency, as no non-prime attribute depends on a subset of the primary key.

The RESCUE table has 2 transitive dependencies. Transitive dependency is created when a non-prime attribute depends on another non-prime attributes in the table.

- Here, the following attributes - RESC_PET_NAME, BREED_NUM, RESC_PET_DOB, RESC_PET_DOR and RESC_PET_DOP depend on the non-prime attribute RESC_PET_NUM.
- And the following attributes - RESC_VET_FNAME, RESC_VET_LNAME, RESC_VET_SPECIALIZATION, RESC_VET_BROAD_CERT, RESC_VET_NUM_PRACT_YRS, RESC_VET_CONTACT_NUM, CLI_NUM, RESC_VET_WORK_HRS depend on the non-prime attribute RESC_VET_NUM.

Relational Schema

RESCUE (**RESC_APP_NUM**, RESC_APP_DATE, RESC_APP_DIAGNOSIS, RESC_APP_PRESCRIPTION, INV_NUM, RESC_PET_NUM, RESC_PET_NAME, BREED_NUM, RESC_PET_DOB, RESC_PET_DOR, RESC_PET_DOP, RESC_VET_NUM, RESC_VET_FNAME, RESC_VET_LNAME, RESC_VET_SPECIALIZATION, RESC_VET_BROAD_CERT, RESC_VET_NUM_PRACT_YRS, RESC_VET_CONTACT_NUM, CLI_NUM, RESC_VET_WORK_HRS)

Partial Dependencies

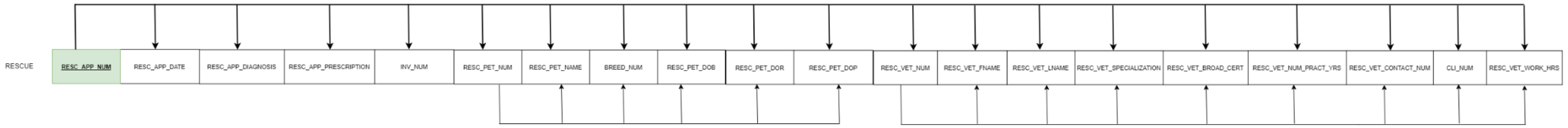
There are no partial dependencies in the table.

Transitive Dependencies

(RESC_PET_NUM -> RESC_PET_NAME, BREED_NUM, RESC_PET_DOB, RESC_PET_DOR, RESC_PET_DOP)

(RESC_VET_NUM -> RESC_VET_FNAME, RESC_VET_LNAME, RESC_VET_SPECIALIZATION, RESC_VET_BROAD_CERT, RESC_VET_NUM_PRACT_YRS, RESC_VET_CONTACT_NUM, CLI_NUM, RESC_VET_WORK_HRS)

Dependency Diagram



Second Normal Form

The table is in 2NF if:

- It is already in 1NF
- It has no partial dependencies

The second normal form (2NF) for this table is the same as the first normal form 1NF, because the RESCUE table is already in 1NF, and it has no partial dependencies.

Relational Schema

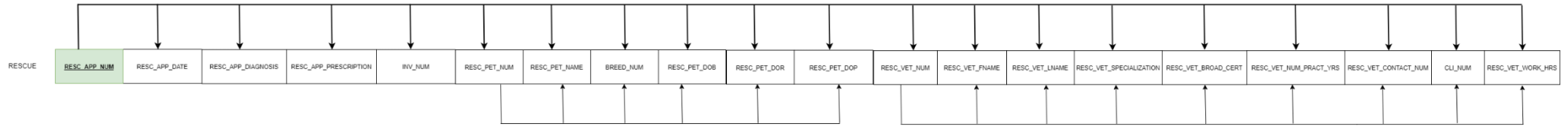
RESCUE (**RESC_APP_NUM**, RESC_APP_DATE, RESC_APP_DIAGNOSIS, RESC_APP_PRESCRIPTION, INV_NUM, RESC_PET_NUM, RESC_PET_NAME, BREED_NUM, RESC_PET_DOB, RESC_PET_DOR, RESC_PET_DOP, RESC_VET_NUM, RESC_VET_FNAME, RESC_VET_LNAME, RESC_VET_SPECIALIZATION, RESC_VET_BROAD_CERT, RESC_VET_NUM_PRACT_YRS, RESC_VET_CONTACT_NUM, CLI_NUM, RESC_VET_WORK_HRS)

Transitive Dependencies

(RESC_PET_NUM -> RESC_PET_NAME, BREED_NUM, RESC_PET_DOB, RESC_PET_DOR, RESC_PET_DOP)

(RESC_VET_NUM -> RESC_VET_FNAME, RESC_VET_LNAME, RESC_VET_SPECIALIZATION, RESC_VET_BROAD_CERT, RESC_VET_NUM_PRACT_YRS, RESC_VET_CONTACT_NUM, CLI_NUM, RESC_VET_WORK_HRS)

Dependency Diagram



Third Normal Form

The table is in 3NF if:

- It is already in 2NF
- It has no transitive dependencies in the table

The RESCUE is already in 2NF. By removing the transitive dependencies in it, we will be able to normalize it to 3NF.

To achieve this, the RESCUE table is broken down into the 3 different tables - APPOINTMENT, PET and VET. This will eliminate the transitive dependencies in it and the table will be in 3NF.

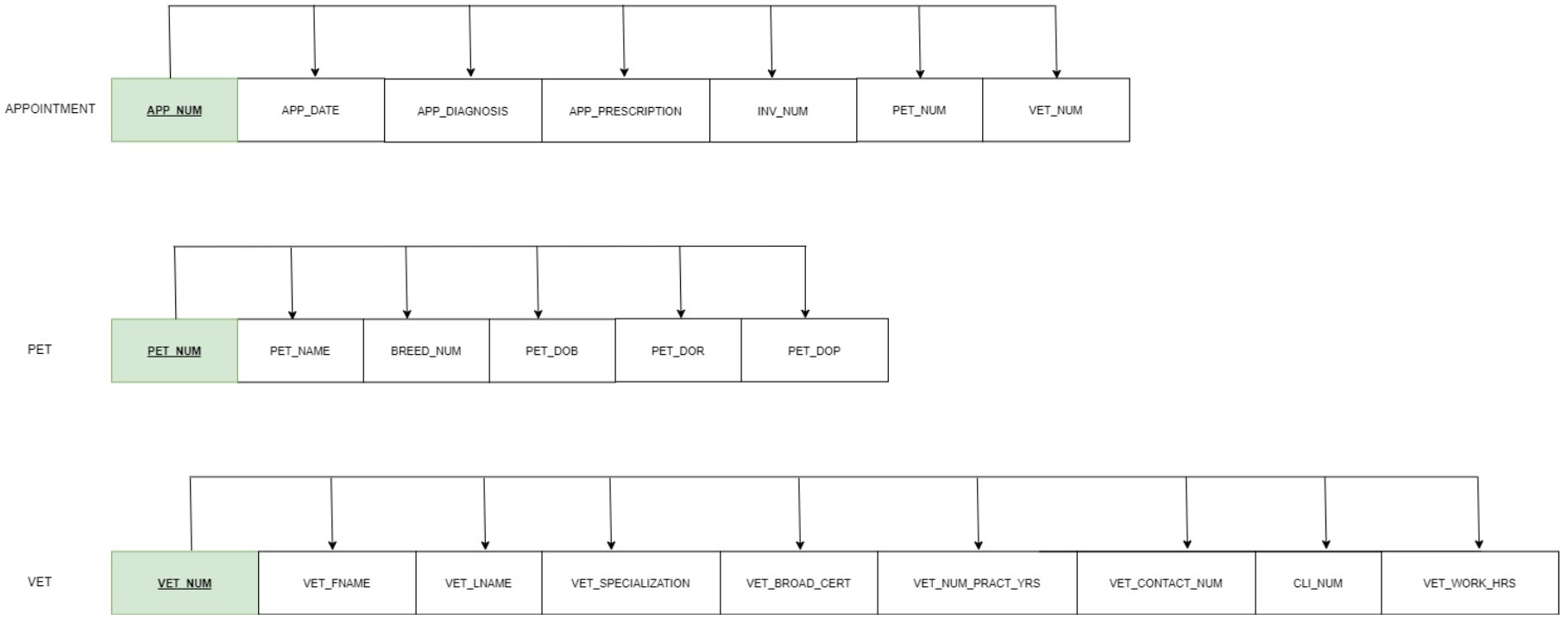
Relational Schema

APPOINTMENT (**APP_NUM**, APP_DATE, APP_DIAGNOSIS, APP_PRESCRIPTION, INV_NUM, PET_NUM, VET_NUM)

PET (**PET_NUM**, PET_NAME, BREED_NUM, PET_DOB, PET_DOR, PET_DOP)

VET (**VET_NUM**, VET_FNAME, VET_LNAME, VET_SPECIALIZATION, VET_BROAD_CERT, VET_NUM_PRACT_YRS, VET_CONTACT_NUM, CLI_NUM, VET_WORK_HRS)

Dependency Diagram



The process of normalizing the RESCUE table in 1NF to APPOINTMENT, PET and VET tables in 3NF have been explained.

Part 3: Database

Questions and their SQL Queries:

A query that pulls data from one table

1) How many numbers of pets are rescued in the year 2021 by the animal rescue?

```
SELECT COUNT(*) AS 'Number of pets rescued in 2021'
FROM PET
WHERE YEAR(PET_DOR) = 2021;
```

A query that pulls data from two tables

2) What are the names of Golden Retriever dogs rescued by the animal rescue?

```
SELECT PET_NAME
FROM PET INNER JOIN BREED
ON PET.BREED_NUM = BREED.BREED_NUM
WHERE BREED.BREED_NAME = 'Golden Retriever';
```

A query that also includes a subquery

3) What are the names of the oldest pets rescued by the animal rescue?

```
SELECT PET_NAME
FROM PET
WHERE PET_DOB = (SELECT MIN(PET_DOB) FROM PET);
```