



Dona Spring Animal Shelter

Activity Database with a focus on
Animals and Volunteers

Group 4

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Overview for Final Presentation

1. Client Description and Needs
2. The Database
3. Queries
4. Forms
5. Reports
6. Normalization Analysis

Client Description

- The Dona Spring Animal Shelter is Berkeley's arm in dealing with animals, and their associated issues
- Provides services for adoption, solving public disturbance issues involving bites, animal cruelty, impounding stray animals and cleaning up animal remains
- 20 employees, 1000 registered volunteers, 70 kennels

Client Situation and Database Benefits

Current Situation

- Lacked the Capability to handle Volunteers
- Unable to :
 - Aggregate Existing Data
 - Integrate between Human data and Animal data
 - Identify animal costs
 - Identify problem hot-spots

Our Prototype

- Records Volunteer Data and Logs
- Forecast Volunteer Availability
- Maintain Thorough Logs for Employees and Volunteers
- Aggregate Vaccination Data for Animals
- Link Employees and Volunteers to Animals
- Figures out how much individual Animals are to maintain
- Generates Locations with high Road Kill Densities etc

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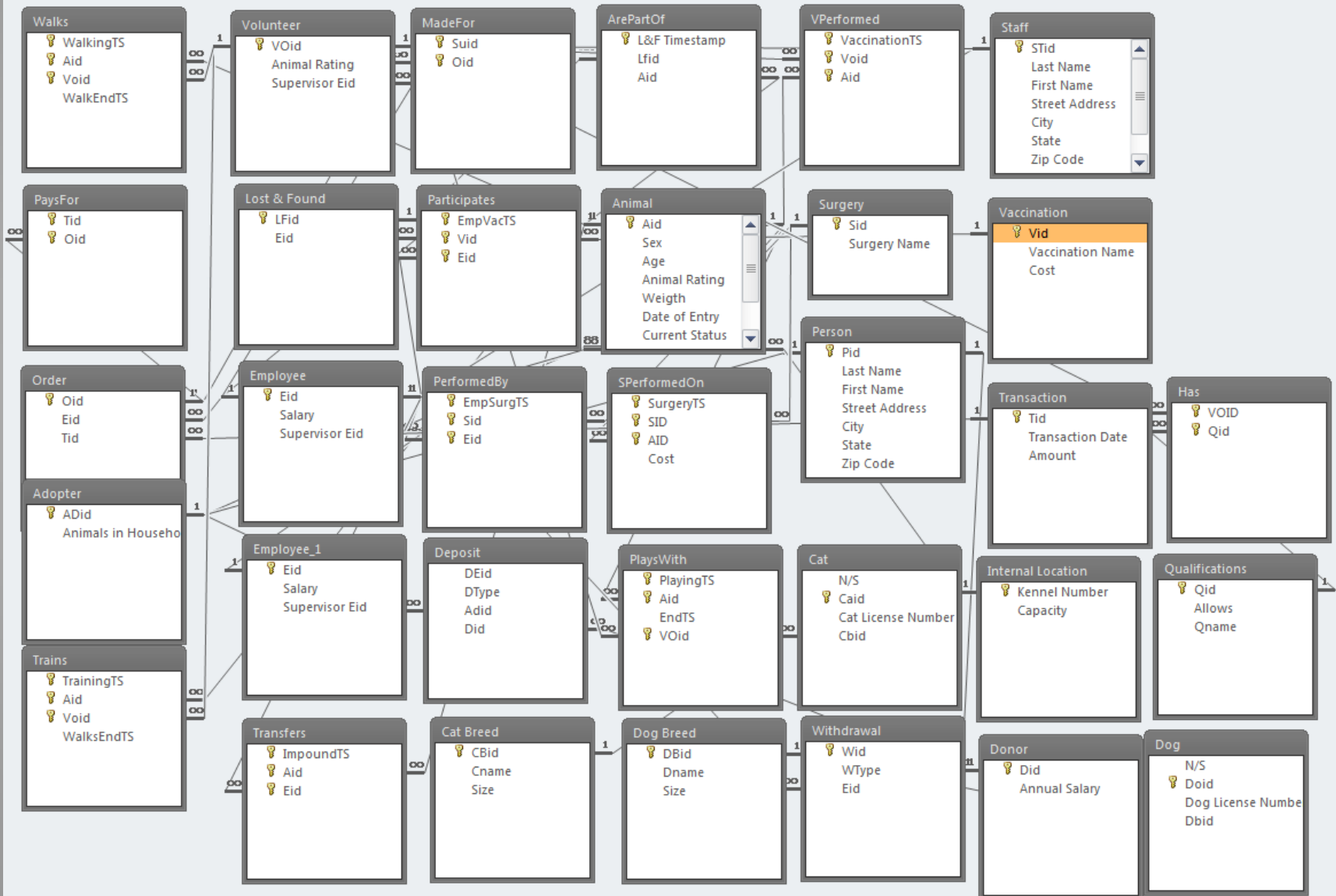
Relational Schema

1. Person (Pid, Fname, Lname, Street Address, City, State, Zip Code)
 - 1a. Donor (Did, Annual Salary)
 - 1b. Adopter (ADid, Animal's Owned)
2. Animal(Aid, Sex, Animal Rating, Age, Current Status, Date of Entry, Weight, Adid¹, Kennel Num³, Eid⁴)
 - 2a. Other (OTid, Type, Size)
 - 2b. Dog (DOid, N/S, Dog License Number, DBid⁶)
 - 2c. Cat (CAid, N/S, Cat License Number, CBid⁵)
3. Internal Location (Kennel Number, Capacity)
4. Staff (STid, Ssn, SName, Address, Phone)
 - 4a. Volunteer (VOid, Animal Rating, Super STid⁴)
 - 4b. Employee (Eid, Salary, Supervisor STid⁴)
5. CatBreed (CBid, CName, Size)
6. DogBreed (DBid, DName, Size)
7. Surgery (Sid, SurgName, Cost)
8. Vaccinations (Vid, VName, Cost)
9. LostAndFound (LFid, STid⁴)
10. Qualifications (Qid, QName)
11. Transactions (Tid, Date, Amount)
 - 11a. Deposit (DEid, DType, Adid¹, Did¹)
 - 11b. Withdrawal (Wid, WType, Eid⁴)

Relational Schema

12. Order (Oid, STid4, Tid11)
13. Supplies (SUid, Quantity, Surname)
14. Possible Volunteer Hours (STid, Day of Week, Start Time, End Time, Confirmed)
15. External Animal Control (EACid, Number of Animals, File Date, Close Date, Street Address, City, State, Zip Code, STid4, EACid15)
 - 15a. Impound (Iid, Reason)
 - 15b. Bite (Bid, Police Reference Number)
 - 15c. Noise (Nid, Time of Day)
16. Transfers (Impound TS, Aid2, STid4)
17. SPerformed On (Surgery TS, Sid7, Aid2, Cost)
18. VPerformed On (Vaccination TS, Vid8, Aid2)
19. Plays With (Playing TS, Aid2, STid4, EndTS)
20. Walks (Walking TS, Aid2, STid4, EndTS)
21. Trains (Training TS, Aid2, STid4, EndTS)
22. Has (Void4, Qid10)
23. Made For (Suid13, Oid12)
24. Participates (EmpVacTS, Vid8, STid4)
25. Performed By (EmpSurgTS, Sid7, STid4)
26. Are Part Of (L&F TS, LFid9, Aid2)

Relationships View in Access



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Query 1: Volunteer Availability Forecasting

- Forecasts available volunteer hours at specific dates
- Ranks volunteer's reliability of attending promised times

Confirmed Planned Hours* (Actual Hours/Planned Hours)

Benefits:

- Can determine shortages of volunteers and then determine who to reallocate from days with a many volunteers to days with a shortage of volunteers
- Helps them smooth volunteer availability daily

Query 1: Volunteer Availability Forecasting

```
SELECT Q2_ActualOverPossible.DaysofWeek,  
       [Q2_ActualOverPossible].[ActualOverPossible]*[Q2_ExpectedHours].[ExpectedHours] AS  
       ExpectedHours  
FROM Q2_ExpectedHours INNER JOIN Q2_ActualOverPossible ON  
     Q2_ExpectedHours.DaysofWeek = Q2_ActualOverPossible.DaysofWeek  
WHERE (((Q2_ExpectedHours.Confirmed)=-1));
```

Sub-queries for Query 1:

```
SELECT P.DaysofWeek, Sum([P].[EndTS]-[P].[StartTS]) AS ExpectedHours, P.Confirmed  
FROM PossibleVolunteerHours AS P  
GROUP BY P.DaysofWeek, P.Confirmed;
```

Query 2: Ranking Animal Lifetime Cost

- Ranks animals from most expensive upkeep to least expensive
- Tracks lifetime expenses for different vaccination and surgery performed

Benefits:

- Determine which animal to euthanize first in event of space/fund shortage
- Provides adopters with realistic cost of ownership information

Query 2: Ranking Animal Lifetime Cost

```
SELECT S.AID,S.COST, "Surgery" As Type
FROM SPerformedon AS S
UNION SELECT VP.AID, V.COST, "Vaccination" As Type
FROM VACCINATION AS V, VPerformed AS VP
Where V.[Vaccination Name]=VP.VName;
```

Query 3: Ranking Donors

- Rank donors in order of donation amount weighted by donation frequency

Benefits:

- Prioritize donors that should be contacted first when there are expected shortages of funds

Query 3: Ranking Donors

```
SELECT Don.DID, T.[Transaction Date], Sum(T.Amount) AS
    SumOfAmount, DateDiff("d",[T].[Transaction Date],Date())
    AS DateDiff, Round([SumOfAmount]/[DateDiff],2) AS
    DonationSignificance
FROM [Transaction] AS T INNER JOIN (DONOR AS Don INNER
    JOIN DEPOSIT AS Dep ON Don.Did = Dep.Did) ON T.Tid =
    Dep.Tid
GROUP BY Don.DID, T.[Transaction Date],
    DateDiff("d",[T].[Transaction Date],Date())
ORDER BY
    Round(Sum(T.Amount)/DateDiff("d",[T].[Transaction
    Date],Date()),2) DESC;
```


Query 4: Quantifying Volunteer-Animal Relationships

- Identifies which animal-volunteer pair works best together
- Determines how much attention an animal has received over its lifetime (or any other time range)
- Outputs animal and volunteer activity history

Benefits:

- Maintain animal happiness by minimizing times between interaction with volunteer
- Determines priority between volunteers in spending time with animal (under the circumstance that two volunteers both want to work with the animal)

Query 4: Quantifying Volunteer-Animal Relationships

```
SELECT ActualVolunteerHours.DateTS, ActualVolunteerHours.Void,  
       Animal.AnimalName, ActualVolunteerHours.Type, ActualVolunteerHours.StartTS,  
       ActualVolunteerHours.EndTS  
FROM (Animal INNER JOIN ActualVolunteerHours ON Animal.Aid =  
      ActualVolunteerHours.Aid) INNER JOIN Cat ON Animal.Aid = Cat.Aid;
```

```
SELECT ActualVolunteerHours.DateTS, ActualVolunteerHours.Void,  
       Animal.AnimalName, ActualVolunteerHours.Type, ActualVolunteerHours.StartTS,  
       ActualVolunteerHours.EndTS  
FROM Animal INNER JOIN (Dog INNER JOIN ActualVolunteerHours ON Dog.Aid =  
      ActualVolunteerHours.Aid) ON (Animal.Aid = Dog.Aid) AND (Animal.Aid =  
      ActualVolunteerHours.Aid);
```

```
Select *, "Dog" As Animal  
From Q_DogActivity  
UNION SELECT *, "Cat" As Animal  
From Q_CatActivity;
```


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Form 1: Switchboard


Allows easy navigation between forms

 Navigation Form

Add Person	<h2>Add Staff</h2> <p> </p> <p>STid <input type="text" value="1"/></p> <p>Last Name <input type="text" value="Janaki"/></p> <p>First Name <input type="text" value="Gunnam"/></p> <p>Street Address <input type="text" value="4232 Hearst"/></p> <p>City <input type="text" value="Berkeley"/></p> <p>State <input type="text" value="CA"/></p> <p>Zip Code <input type="text" value="94709"/></p> <p>Phone Number <input type="text"/></p> <p>SSN <input type="text"/></p>
Add Animal	
Impound Transfers Form	
Add Staff	
Enter Lost Found	
Create Order	
Add Withdrawal Transaction	
Add Possible Volunteer	
..	
Perform Vaccination	
Perform Surgery	
Add Deposit Transaction	
External Animal Control	

Form 2: Add Animal

Allows you to enter new Animals into the database into the table of the Animal's Type

Add Animal 

Aid

Name

Sex

Age

Animal Rating

Weight

Date of Entry

Current Status

Adid

Kennel Number

EID

Dog

DogSubform					
Doid	N/S	Dog License Numbe	Dname	Aid	
* <input type="text" value="(New)"/>	<input type="checkbox"/>				

Cat

CatSubform					
Caid	N/S	Cat License N	CatBreed	Aid	
* <input type="text" value="(New)"/>	<input type="checkbox"/>				

Other Animal

OtherAnimalSubform					
Otid	Type	Other Size	Aid		
* <input type="text" value="(New)"/>					

Form 3: Add Staff

Allows you to enter new staff members into the database, into the Volunteer or Employee table

STid

Last Name

First Name

Street Address

City

State

Zip Code

Phone Number

SSN

Volunteer

VolunteerSubform

VOid	Animal Rating	Supervisor Ei	STid
* (New)			

Employee

EmployeeSubform

Eid	Salary	Supervisor Ei	STid
* (New)			

Form 4: Create Order

Need an order to be placed to restock a particular type of item

Create Order

Old

Eid

Tid

WithdrawalSubform

Add WithdrawalTransaction

Tid

Transaction Date

Amount

WithdrawalSubform

Wid	WType	Eid	Tid
2	Supplies Purchase	1	2
*	(New)		

MadeForSubform

Suid	Oid	OrderTS
	1	4/2/2013

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Report 1: Animal Surgeries

Easy way to view the surgeries performed by the shelter with associated costs and animals

Surgery Performed On			
SName	SurgeryTS	AID	Cost
Benign Skin Mass	4/4/2013	5	\$5,000.00
Liver Cancer	4/4/2013	5	\$8,000.00
Neuter	4/4/2013	7	\$3,000.00
Spay	5/7/2013	11	\$2,500.00
Spleen Cancer	5/9/2013	20	\$4,000.00

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Report 2: Number of Dogs by Breed

Easy way to view the current inventory of dogs sorted by dog breed

DogBreed	
Dname	Doid
Beagle	7
Dalmation	6
	2
Golden Retriever	10
Poodle	3
Pug	8
	9

Report 3: Volunteer Hours by Day

Easy way to view the projected hours of volunteers who are expected to turn up on a given day of the week

Projected Volunteer Hours

DaysofWeek	ExpectedHours
Monday	1
Saturday	12.5
Sunday	64
Thursday	0.8
Tuesday	3
Wednesday	32

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Normalization Analysis

Person (Pid, Fname, Lname, Street Address, City, State, Zip Code)

a. Donor (Did, Annual Salary)

b. Adopter (ADid, Animal's Owned)

In 3NF - because the complete primary key determines all other attributes and non-key attributes do not determine other attributes.

Animal(Aid, Sex, Animal Rating, Age, Current Status, Date of Entry, Weight, Adid¹, Kennel Num³, Eid⁴)

a. Other (OTid, Type, Size)

b. Dog (DOid, N/S, Dog License Number, DBid⁶)

c. Cat (CAid, N/S, Cat License Number, CBid⁵)

In 3NF – Same as above

Staff (STid, Ssn, SName, Address, Phone)

a. Volunteer (VOID, Animal Rating, Super STid⁴)

b. Employee (Eid, Salary, Supervisor STid⁴)

In 3NF – For similar reasons as above

Normalization Analysis

Transactions (Tid, Date, Amount)

a. Deposit (DEid, DType, Adid¹, Did¹)

b. Withdrawal (Wid, WType, STid⁴)

In 3NF – For similar reasons as other 3NF entities on last slide

External Animal Control (EACid, Number of Animals, File Date, Close Date, Street Address, City, State, Zip Code, STid⁴)

a. Impound (lid, Reason)

b. Bite (Bid, Police Reference Number)

c. Noise (Nid, Time of Day)

In 3NF - For similar reasons as other 3NF entities on last slide

Normalization Analysis

Surgery (Sid, SurgName, Cost)

In 2NF – Non-key attribute “SurgName” can determine “Cost” so relation schema isn’t 3NF

Vaccinations (Vid, VName, Cost)

In 2NF – Non-key attribute “Vname” can determine “Cost” so relation schema isn’t 3NF

Qualifications (Qid, QName)

2NF – Non-key attribute “Qname” can determine “Qid” so relation schema isn’t 3NF

Order (Oid, STid⁴, Tid¹¹)

In 2NF – Foreign non-key attribute “Tid” can determine “Oid”

Supplies (SUId, Quantity, Surname)

2NF – Foreign non-key attribute “Surname” can determine “Quantity”

Questions & Answers



Architectural drawing of the new animal shelter