Dona Spring Animal Shelter

Activity Database with a focus on Animals and Volunteers

Group 4
Sina Bigdeli, Janaki Gunnam, Derrick Yen, Chris Tong, Himanshu Jatia, Jian Sun
Overview for Final Presentation

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

2. The Database

3. Queries
4. Forms
5. Reports
6. Normalization Analysis
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)
12. Order (Oid, STid4, Tid11)
13. Supplies (SUid, Quantity, Suname)
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)
1. Client Description and Needs
2. The Database

3. Queries
4. Forms
5. Reports
6. Normalization Analysis
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
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
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 2: Ranking Animal Lifetime Cost
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
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;
1. Client Description and Needs
2. The Database
3. Queries
4. Forms
5. Reports
6. Normalization Analysis
Form 1: Switchboard

Allows easy navigation between forms
Form 2: Add Animal

Allows you to enter new Animals into the database into the table of the Animal’s Type
Form 3: Add Staff

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

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>STid</td>
<td>(New)</td>
</tr>
<tr>
<td>Last Name</td>
<td></td>
</tr>
<tr>
<td>First Name</td>
<td></td>
</tr>
<tr>
<td>Street Address</td>
<td></td>
</tr>
<tr>
<td>City</td>
<td></td>
</tr>
<tr>
<td>State</td>
<td></td>
</tr>
<tr>
<td>Zip Code</td>
<td></td>
</tr>
<tr>
<td>Phone Number</td>
<td></td>
</tr>
<tr>
<td>SSN</td>
<td></td>
</tr>
</tbody>
</table>

志愿子表
- **VOID**: Animal Rating, Supervisor Ei, STid

员工子表
- **Eid**: Salary, Supervisor Ei, STid

Add Record
Need an order to be placed to restock a particular type of item
1. Client Description and Needs
2. The Database
3. Queries
4. Forms
5. Reports
6. Normalization Analysis
Report 1: Animal Surgeries

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

<table>
<thead>
<tr>
<th>SName</th>
<th>SurgeryTS</th>
<th>AID</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benign Skin Mass</td>
<td>4/4/2013</td>
<td>5</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>Liver Cancer</td>
<td>4/4/2013</td>
<td>5</td>
<td>$8,000.00</td>
</tr>
<tr>
<td>Neuter</td>
<td>4/4/2013</td>
<td>7</td>
<td>$3,000.00</td>
</tr>
<tr>
<td>Spay</td>
<td>5/7/2013</td>
<td>11</td>
<td>$2,500.00</td>
</tr>
<tr>
<td>Spleen Cancer</td>
<td>5/9/2013</td>
<td>20</td>
<td>$4,000.00</td>
</tr>
</tbody>
</table>

Friday, May 03, 2013

Page 1 of 1
Report 2: Number of Dogs by Breed

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

<table>
<thead>
<tr>
<th>Dog Breed</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beagle</td>
<td>7</td>
</tr>
<tr>
<td>Dalmation</td>
<td>6</td>
</tr>
<tr>
<td>Golden Retriever</td>
<td>10</td>
</tr>
<tr>
<td>Poodle</td>
<td>8</td>
</tr>
<tr>
<td>Pug</td>
<td>9</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Day of Week</th>
<th>Expected Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>1</td>
</tr>
<tr>
<td>Saturday</td>
<td>12.5</td>
</tr>
<tr>
<td>Sunday</td>
<td>64</td>
</tr>
<tr>
<td>Thursday</td>
<td>0.8</td>
</tr>
<tr>
<td>Tuesday</td>
<td>3</td>
</tr>
<tr>
<td>Wednesday</td>
<td>32</td>
</tr>
</tbody>
</table>
1. Client Description and Needs
2. The Database
3. Queries
4. Forms
5. Reports

6. Normalization Analysis
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, Adid\(^1\), Kennel Num\(^3\), Eid\(^4\))
a. Other (OTid, Type, Size)
b. Dog (DOid, N/S, Dog License Number, DBid\(^6\))
c. Cat (CAid, N/S, Cat License Number, CBid\(^5\))
In 3NF – Same as above

Staff (STid, Ssn, SName, Address, Phone)
a. Volunteer (VOid, Animal Rating, Super STid\(^4\))
b. Employee (Eid, Salary, Supervisor STid\(^4\))
In 3NF – For similar reasons as above
Transactions \((\text{Tid}, \text{Date}, \text{Amount})\)

a. Deposit \((\text{DEid}, \text{DType}, \text{Adid}^1, \text{Did}^1)\)

b. Withdrawal \((\text{Wid}, \text{WType}, \text{STid}^4)\)

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

External Animal Control \((\text{EACid}, \text{Number of Animals, File Date, Close Date, Street Address, City, State, Zip Code, STid}^4)\)

a. Impound \((\text{Iid}, \text{Reason})\)

b. Bite \((\text{Bid}, \text{Police Reference Number})\)

c. Noise \((\text{Nid}, \text{Time of Day})\)

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, Suname)
2NF – Foreign non-key attribute “Suname” can determine “Quantity”
Questions & Answers

Architectural drawing of the new animal shelter