

# Mo's Mutt House

## Background

Mo loves dogs, and she has decided to open a shelter in her community. She's looking for software to help her manage the shelter and thinks that your team has got what it takes to make her dreams a reality!

## User Access

Mo will have many people helping her with the shelter, and since she is starting out small, they will all be volunteers. Volunteers can update information about dogs and enter received adoption applications, can enter new information for dogs, including surrenders and expenses, but cannot perform adoptions. Mo can do volunteer tasks, and also is the only person who can mark adoption applications as approved, enter adoption info and can view reports. (This could change, as Mo has friends volunteering who she might eventually trust with the same responsibilities.)

Users will login with their email address and a password. You may optionally secure the storage of passwords using salting and hashing. For each user, you will also keep track of their first name, last name, the date they started volunteering at the shelter, and a single cell phone number in case someone needs to reach them. For now, user information will be maintained by the database administrator through SQL commands; our application does not need to provide any UI for user information maintenance.

There will be no concurrent use of the system, that is, we expect only one user to be logged in at a time. Mo might access reports while operations occur, but as this will be read-only, no transactional locking will be necessary.

## Dogs

Mo currently can only shelter 15 dogs at any time. This limit will need to be adjustable by database administrator or through an application setting (such as in a configuration file).

The following features must be tracked for each dog. If not otherwise specified, they are required.

- Name
- Breed
  - The appendix will contain a listing of breed choices, however it would not be wise to hard code these values as they may be updated in the future. Mixed breed dogs may have multiple breeds chosen. In addition, "Unknown" or "Mixed" may be chosen as the only breed (in other words, choosing those prevents choosing more than one breed). If and only if "Unknown" or "Mixed" are chosen, the breed of the animal can be updated in the future.
  - Whenever a dog has been assigned multiple breeds and it is displayed, such as in reports, they should be concatenated into a single value, delimited with a forward slash (/). The combination of breed names should be in alphabetical order, such as "Affenpinscher/Poodle/Vizsla".
- Sex
  - "Male", "Female", or "Unknown". If "Unknown", this can be updated, but other values cannot.
- Alteration status
  - Also known as neutered (for males) or spayed (for females). However, the sex of the dog should not matter for this feature; it's easiest to store this as a binary value.
  - This can only be updated after surrender if the dog was unaltered when it is surrendered.
  - Note that a dog cannot be adopted until it has been spayed or neutered.
- Age

- Remember that some dogs are puppies - less than a year old - which necessitates knowing how many months old they are.
- Description
  - This could include a description of the dog, any health concerns, and other miscellaneous details.
- Microchip ID
  - Not all dogs will have a microchip. A dog may have only one microchip. Microchip numbers are globally unique, but vary from vendor to vendor and may be a number or an alphanumeric ID. Because of this, all microchip values should also be unique in the database.
  - If a dog does not have a microchip, it must have one implanted before it can be adopted. Mo's volunteers have been trained on how to do this procedure and can update the microchip value after implantation.
- Expenses
  - You will need to record the following details for each expense incurred for a dog:
    - The date of the expense
    - The name of the vendor (such as a veterinarian or pet supply store)
    - The amount of the expense
    - An optional description of the expense
  - Only expenses after the dog has been surrendered, and before it was adopted will be tracked.
  - Each dog can incur only one expense associated with the one vendor at a given date. The system should prevent someone from accidentally entering the same expense twice.
- Surrender date
- Surrender reason
- Surrendered by animal control – described further
- Dog ID
  - This is an ordinal number assigned by the system, in essence, the first dog entered will be 1, the second entered 2, etc. Dog IDs will be displayed in reports and are used by Mo's volunteers to identify a specific dog.

When adding a dog, all features must be editable. For dogs already in the shelter, only values for sex (if "unknown"), microchip (if not currently present), breed (only if "Unknown" or "Mixed" are the current breed), and alteration status (only if unaltered) can be changed. Values cannot be changed for adopted dogs.

## Surrenders

Sadly, most dogs are surrendered to the shelter by their current owner. Mo does not require collecting contact information from the person making the surrender but does ask the reason for the surrender and for any other information, such as a microchip ID. For auditing purposes, the system needs to keep track of which user originally entered the dog's information.

Occasionally a dog may be brought in by the local animal control department, and this must be tracked as the animal control department will reimburse all expenses for that dog up until it is adopted, Mo will be reimbursed by animal control after it is adopted.

## Adopters and Adoption Applications

Mo has a slightly unusual adoption process. Initially, applications are filled out on paper, after which any required information is entered into the system. Users will enter the adopter's contact information (for new adopters) as well as the adoption application data. Contact information of the adopter includes:

- Applicant first name and last name
- Address (street, city, state, zip code)

- Phone number
- Email address

The email address of the adopter is expected to be unique. If the adopter's email is already present in the system, no additional adopter contact information needs to be recorded. Once entered into the system, an adopter's contact information cannot be updated.

Each adopter can file any number of adoption applications. For each application our system should track the date of adoption application and optional co-applicant's first name and last name.

The system should also generate an application number for each registered adoption application. This should be an ordinal number, in essence the first application entered will be 1, the second entered will be 2, etc.

All adoption applications have a default state of "pending approval". Mo will personally review paper applications, and if she likes what she sees, will approve the application, and the system will mark it in the database as "approved", otherwise the application will be marked as "rejected".

When a pet is available for adoption, Mo will contact applicants who are approved for adoption and find one who is willing to adopt. The system will not try to do any matching for her. Mo expects she will match animals to adopters mostly in her head and then contact adopters to find out if they are interested in the particular dog. Once Mo has found an adopter for the dog and they accept her offer, she will enter the adoption details into the system when the adoption occurs, which includes these features:

- The associated dog
- The associated application
- Adoption date
- Adoption fee – computed by the system using the following criteria:
  - This is calculated by taking all expenses and multiplying them by 115% - in other words, the adoption fee is the sum of all expenses plus 15%
  - If a dog was brought in by animal control, then the adoption fee is 15% of expenses

As was mentioned above, an adopter may apply to adopt more than one dog, but each adoption application can only be matched to a single dog. In the event an adopter wants to adopt another dog, they would fill out an entirely new application for Mo to review, and, if approved, would be matched by her to a new animal.

We will also assume that no dog will ever be surrendered to Mo's House more than once.

## User Interface

### Logging In

As mentioned, all users will need to login using their email and a password. The system should provide appropriate feedback if incorrect login information is entered. After a successful login, the user will be taken to the Dog Dashboard.

### Dog Dashboard

The primary interface for the application should be a dashboard that shows all dogs currently in the shelter. The dashboard should list the dog's name, breed, sex, alteration status, age, and adoptability status, ordered by date surrendered, oldest to newest. You should incorporate a mechanism for the user to filter the dashboard by adoptability status. Optionally, you may allow the user to sort the dashboard by any of the attributes displayed. Clicking on the dog in the list will display the Dog Detail screen which will be described further on. The number of currently available spaces in the shelter should be prominently displayed on the dashboard, and if the shelter is not full, an "Add Dog" button or link should be made available. An "Add Adoption Application" button or link should also be provided.

## Add Dog

This screen will require the entry of all values specified in the “Dogs” section of this document. Note that the system can only allow adding a dog when there is space available. Once submitted, the user can choose to go to the dog detail screen so that any additional information, such as expenses, can be entered, or back to the Dog Dashboard.

If a bulldog with the name of “[Uga](#)” is surrendered, the system must reject this name and prompt the user to enter some other name for the dog to be registered in the system.

## Dog Details

This detail screen will show all the information available for a dog, as described in the “Dogs” section. Any features which can be edited must also be editable on this screen. In addition, there should be an “Expenses” section which shows all details for any expenses, their total, and allows new expenses to be entered. If eligible for adoption, an “Add Adoption” button or link should be made available.

## Expenses

A form for adding expenses must be provided. All the necessary features of an expense have been listed previously.

## Adoption

When a dog is going to be adopted, the adoption needs to be entered in the system and will be done by loading this screen from the “Dog Detail” screen and clicking “Add Adoption”.

Mo will first be prompted to search for eligible adoption application by looking up approved adoption applications by searching on any part of both the applicant last name and the co-applicant last name. The search dialog should have only one input field and should be case insensitive. The results list should include all contact information of the adopter to allow Mo to see that she is choosing the right adopter. In case the match is made by co-applicant last name, then matched co-applicant last name should also be displayed.

After the user chooses the adopter from the search results, their most recent adoption application is displayed, the adoption fee is calculated and displayed onscreen, and then Mo is prompted to enter the adoption date. Mo will then confirm and submit the adoption details to be recorded in the database.

## Add Adoption Application

Accessible from the dog dashboard, this screen will allow the user to enter the contact information for adopters and also add new adoption applications. When an adoption application is submitted, the system will display to the user the application number that has been assigned to it. Application numbers will be written on the application paperwork to keep track of it.

## Adoption Application Review

If Mo is logged in, this screen will list any applications pending approval, together with the information about corresponding applicant and co-applicant, and provide her with a mechanism to mark the application as approved or rejected. Mo will need to access this via a link or button that appears on her Dog Dashboard.

## Reports

Mo would like a few reports to help her run the shelter more efficiently. If she's logged in, a link to access the reports should be made available from the Dog Dashboard.

### Animal Control Report

The auditors at animal control need to know the following information: the number of dogs surrendered by them in a month, the expenses for any animal control-surrendered dogs adopted that month so they can reimburse Mo, and also any dogs adopted in that month that were in the rescue for 60 or more days.

This report, when run, is only for dogs brought in by animal control, will include the current month and the previous six months, and will display the count of dogs turned over by animal control, the count of any dogs adopted during that month who had spent in the rescue 60 days or more, and the total expenses for dogs adopted in that month. These can be displayed in three separate sections or in an alternative layout if you think there is a better way to present the data. (The results for the current month should reflect information up to the date the report is being run.) Each month's summary should allow pulling up a drill down report for that month, which will display individual dog details for each category (surrendered and/or adopted): dog ID, breed (in the case of an animal with multiple breeds, remember that breeds should be combined into a single value in alphabetical order), sex, alteration status, microchip ID, surrender date, and for dogs in rescue for 60 or more days before adoption, the number of days they were in rescue. The listing of animal control surrenders should be sorted by dog ID ascending, while the listing of adopted dogs should be listed by number of days in rescue descending, followed by dog ID descending.

### Monthly Adoption Report

Mo would like to monitor adoption activity by tracking the number of dogs surrendered and adopted each month, the total expenses, total adoption fees, and net "profit". This report should show the numbers for each month for the last 12 months (starting from the month previous to the current one) displaying summaries for each breed. Only breeds adopted or surrendered during the 12 month lookback period should be displayed. Depending on how you would like to present this report, it can either be presented row-wise (with a column for the month, breed, number of surrenders, number of adoptions, expenses, adoption fees, net), or column-wise, with each month's data as its own column (meaning a column for breed, and then columns for each month, namely a column with the number of surrenders, a column with the number of adoptions, etc.). If you've chosen to do a columnar format, when a breed (or combination of breeds) has data in one month, but none in another, that cell should left blank and no values (such as "0") displayed. The table should be sorted by month in ascending order (earliest to latest), and by breed name alphabetically (A-Z, in the case of a dog with multiple breeds, remember that breeds should be combined into a single value in alphabetical order).

### Expense Analysis

Mo is also interested in knowing where the rescue is spending money, and she thinks with the right information, could negotiate with vendors for discounts. In order to do this, she'd like a report that lists all vendors and the total spent at that vendor for all expenses, regardless of date. The listing should be sorted by total descending.

### Volunteer Lookup

This will be more of a utility than a report – in the event a volunteer needs to be contacted, such as when they are transporting a dog, this report will allow an entry of a single text string matching first name and/or last name and return any results whose values contain the criteria, case insensitive. An entry of "Jon" would

return “Jon Smith,” “Betty Jones”, “Sigrid Jonsdottir”, “Michael Dijon”, etc. The results should display the volunteer’s first name, last name, email address, and phone number, sorted by last name ascending and first name ascending.

## Appendix

### Breeds

Affenpinscher	Boykin Spaniel	Finnish Spitz	Manchester Terrier	Schnoodle
Afghan Hound	Bracco Italiano	Flat-Coated Retriever	Mastiff	Scottish Deerhound
Airedale Terrier	Briard	Fox Terrier	Miniature American Shepherd	Scottish Terrier
Akbash Dog	Brittany	French Bulldog	Miniature Bull Terrier	Sealyham Terrier
Akita	Brussels Griffon	German Pinscher	Miniature Pinscher	Shetland Sheepdog
Alapaha Blue Blood Bulldog	Bull Terrier	German Shepherd Dog	Miniature Schnauzer	Shiba Inu
Alaskan Husky	Bulldog	German Shorthaired Pointer	Mudi	Shih Tzu
Alaskan Malamute	Bullmastiff	German Spitz	Neapolitan Mastiff	Shihpoo
American Bulldog	Cairn Terrier	German Wirehaired Pointer	Newfoundland	Siberian Husky
American Eskimo	Canaan Dog	Giant Schnauzer	Norfolk Terrier	Silken Windhound
American Foxhound	Cane Corso	Glen of Imaal Terrier	Norwegian Buhund	Silky Terrier
American Pit Bull Terrier	Cardigan Welsh Corgi	Golden Retriever	Norwegian Elkhound	Skye Terrier
American Staffordshire Terrier	Catahoula Leopard Dog	Goldendoodle	Norwegian Lundehund	Sloughi
American Water Spaniel	Caucasian Ovcharka	Gordon Setter	Norwich Terrier	Small Munsterlander Pointer
Anatolian Shepherd Dog	Cavalier King Charles Spaniel	Great Dane	Nova Scotia Duck Tolling Retriever	Soft Coated Wheaten Terrier
Aussiedoodle	Cavapom	Great Pyrenees	Old English Sheepdog	Spanish Greyhound
Australian Cattle Dog	Cavapoo	Greater Swiss Mountain Dog	Otterhound	Spanish Water Dog
Australian Kelpie	Cesky Terrier	Greyhound	Papillon	Spinone Italiano
Australian Shepherd	Chart Polski	Harrier	Pekeapoo	Sprollie
Australian Terrier	Chesapeake Bay Retriever	Havanese	Pekingese	Staffordshire Bull Terrier
Azawakh	Chihuahua	Ibizan Hound	Pembroke Welsh Corgi	Standard Schnauzer

Basador	Chinese Crested	Icelandic Sheepdog	Perro de Presa Canario	Sussex Spaniel
Basenji	Chinese Shar-Pei	Irish Red and White Setter	Peruvian Inca Orchid	Swedish Lapphund
Basset Bleu de Gascogne	Chinook	Irish Setter	Petit Basset Griffon Vendeen	Swedish Vallhund
Basset Hound	Chow Chow	Irish Terrier	Pharaoh Hound	Thai Ridgeback
Beagle	Chug	Irish Water Spaniel	Plott	Tibetan Mastiff
Bearded Collie	Cirneco dell'Etna	Irish Wolfhound	Pointer	Tibetan Spaniel
Beauceron	Clumber Spaniel	Italian Greyhound	Polish Lowland Sheepdog	Tibetan Terrier
Bedlington Terrier	Cockapoo	Jack Russell Terrier	Pomapoo	Tosa Ken
Belgian Laekenois	Cocker Spaniel	Japanese Chin	Pomeranian	Toy Fox Terrier
Belgian Malinois	Collie	Keeshond	Pomsky	Toy Poodle
Belgian Sheepdog	Coton de Tulear	Kerry Blue Terrier	Poodle	Treeing Walker Coonhound
Belgian Tervuren	Curly-Coated Retriever	Komondor	Portuguese Podengo	Vizsla
Bergamasco	Dachshund	Kooikerhondje	Portuguese Water Dog	Volpino Italiano
Berger Picard	Dalmatian	Kromfohrlander	Pug	Weimaraner
Bernese Mountain Dog	Dandie Dinmont Terrier	Kuvasz	Pugapoo	Welsh Springer Spaniel
Bichon Frise	Doberman Pinscher	Labradoodle	Puggle	Welsh Terrier
Black and Tan Coonhound	Dogo Argentino	Labrador Retriever	Puli	West Highland White Terrier
Black Russian Terrier	Dogue de Bordeaux	Lacy Dog	Pumi	Whippet
Bloodhound	Doxiepoo	Lagotto Romagnolo	Pyrenean Shepherd	Wirehaired Pointing Griffon
Blue Picardy Spaniel	English Cocker Spaniel	Lakeland Terrier	Rat Terrier	Wirehaired Vizsla
Bluetick Coonhound	English Foxhound	Large Munsterlander	Redbone Coonhound	Xoloitzcuintli
Boerboel	English Setter	Leonberger	Rhodesian Ridgeback	Yorkipoo
Bolognese	English Springer Spaniel	Lhasa Apso	Rottweiler	Yorkshire Terrier
Border Collie	English Toy Spaniel	Lhasapoo	Russian Toy	Mixed
Border Terrier	Entlebucher Mountain Dog	Longdog	Saint Bernard	Unknown
Borzoï	Eurasier	Lowchen	Saluki	
Boston Terrier	Field Spaniel	Lurcher	Samoyed	
Bouvier des Flandres	Fila Brasileiro	Maltese	Schapendoes	

Boxer	Finnish Lapphund	Maltipoo	Schipperke	
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## Change History

Version	Released	Changes
1.0	5/27/2020	Initial version.
1.1	6/5/2020	<p>Dogs: the 15 dog limit “setting” doesn’t need to be limited to the database</p> <p>Surrenders: clarified that animal control reimburses expenses up until adoption, but not until after it is adopted</p> <p>Adoptions: more details on how adoption fee is computed, removed the word “veterinary” since we meant all expenses. Had a sentence that said volunteers can enter adoption info which was wrong, and removed it. Adjusted description of adoption process to be more consistent with “applicant” versus adopter (an adopter is someone who has/will adopt versus an applicant is someone who applies to adopt)</p> <p>Dog Dashboard: added default sorting by surrender date</p> <p>Adoption Application Review: changed from “adopter” to “applicant” to be more consistent</p> <p>Animal Control Report: made it clearer that this report is only for animal control surrenders</p> <p>Monthly Adoption Report: there was a reference to “two” columns in the potential columnar format which was removed since multiple data values are specified</p> <p>Numerous typo fixes</p>