

Project Phase 1

Team 025

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1 Data Types

Dog

Attribute	Data Type	Nullable
BirthDate	Date	Not Null
DogID	Integer	Not Null
Description	String	Null
Altered	Boolean	Not Null
Sex	String	Not Null
Name	String	Not Null
SurrenderDate	Date	Not Null
SurrenderPhone	String	Null
ByAnimalControl	Boolean	Not Null

Breed

Attribute	Data Type	Nullable
Name	String	Not Null

Microchip

Attribute	Data Type	Nullable
MicrochipID	String	Not Null

Manufacturer

Attribute	Data Type	Nullable
Name	String	Not Null

Expense

Attribute	Data Type	Nullable
Amount	Float	Not Null
Vendor	String	Not Null
Date	Date	Not Null

Category

Attribute	Data Type	Nullable
Name	String	Not Null

Person

Attribute	Data Type	Nullable
Email	String	Not Null
FirstName	String	Not Null
LastName	String	Not Null
Phone	String	Not Null

User

Attribute	Data Type	Nullable
Password	String	Not Null

Volunteer

Attribute	Data Type	Nullable
BirthDate	Date	Not Null

Adopter

Attribute	Data Type	Nullable
Street	String	Not Null
City	String	Not Null
State	String	Not Null
Zip	String	Not Null
Household	Integer	Not Null

Application

Attribute	Data Type	Nullable
Date	Date	Not Null
DecisionDate	Date	Null
IsFeeWaived	Boolean	Not Null
Fee	Float	Not Null
Status	String	Not Null

2 Business Logic Constraints

2.1 User Access

1. Expenses for a dog can only be entered by a volunteer over the age of 18.
2. One and only one user can be the Executive Director.
3. Only the Executive Director can approve or reject adoption applications, enter adoption information, and view reports.
4. Only one volunteer can be logged in at a time except for the Executive Director, who can always be logged in.

2.2 Dogs

1. Dog facility has an initial capacity of 15 dogs (configurable).
2. The following fields must be input when a dog enters the shelter:
 - Name
 - Breed
 - Sex
 - Altered (Neutered or Spayed)
 - Age
 - Microchip ID
 - Expenses
 - Surrender date
 - Dog ID
 - If the surrenderer is from animal control, their phone number is required.
3. These fields are optional to track for each dog:
 - Description
 - If the surrenderer is not from animal control, their phone number is optional.
4. If the dog's breed is "Unknown" or "Mixed," then the dog's breed can be updated to another breed. Otherwise, its breed cannot be updated.
5. If the sex of the dog is "Unknown," then the dog's sex can be updated. Otherwise, its sex cannot be updated.
6. If a dog is Unaltered, it can be updated to Altered. Otherwise, its alteration status cannot be updated.

7. Dogs can only be associated with an expense for a specific vendor once a day.
8. If a dog is not microchipped, a microchip must be implanted before the dog can be adopted.
9. Only volunteers over the age of 18 can perform the microchip procedure.
10. A dog cannot be adopted until it has been altered.
11. A dog may only have one microchip.

2.3 Surrenders

1. If a dog has a Microchip ID, it must be provided at the time of the surrender.
2. If the surrenderer is from animal control, their phone number is visible to all users. Otherwise, the surrenderer's phone number will only be visible to the Executive Director.

2.4 Adopters & Adoption Applications

1. There cannot be two adopters with the same email address.
2. If the adopter's email is already present in the system, their information cannot be updated.
3. Each adopter can submit multiple adoption applications but only one application per day.
4. Adopters must fill out a complete new application for each dog they want to adopt.
5. A dog can only be surrendered once.
6. If a dog was brought in by animal control, the adoption fee is 10% of expenses. Otherwise, the adoption fee is the sum of all expenses plus 25%.
7. If the dog adopted belongs to a "Terrier" breed and is named "Sideways," their adoption fee is waived.

3 User Interface

3.1 Dog Dashboard

1. If shelter is not full, users can add a dog to the shelter.

3.2 Add Dog

1. Bulldogs named "Uga" cannot be registered.

3.3 Adoption

1. If all details of the adoption application are correct, the user can submit adoption details to the database.

3.4 Adoption Application Review

1. Only the Executive Director can review pending adoption applications.

4 Reports

1. Only the Executive Director has access to the reports from the dog dashboard.

4.1 Animal Control Report

1. Data is only available for the current month and the previous six months.

4.2 Monthly Adoption Report

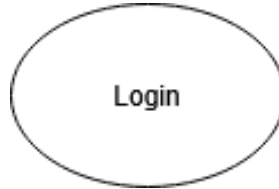
1. Data is only available for breeds adopted or surrendered during the last 12 months.
2. If a dog is surrendered by animal control, the dog's expenses should not be considered when computing net "profit."

4.3 Volunteer Birthdays

1. If a month has no birthdays, then a message with "No volunteer birthdays this month!" should appear.
2. If a volunteer has a 10-year anniversary (i.e., 10, 20, 30, etc.), this should be highlighted.
3. The report should appear month by month, defaulting to the current month.

5 Task Decomposition with Abstract Code

5.1 Login



- **Lock Types:** Read on USER and PERSON table.
- **Enabling Conditions:** None.
- **Frequency:** Number of volunteers logging in per day.
- **Schemas:** Single.
- **Consistency:** Not critical, order is not critical.
- **Subtasks:** No mother task, no decomposition.

-
- User enters *emailAddress*, *password* input fields.
 - When User clicks **Enter** button
 - Validate *emailAddress* and *password* are not blank.
 - If *emailAddress* is found, validate *password*.
 - If validation is true, then:
 - * Navigate to ***Dog Dashboard*** form.
 - Else:
 - * Display error message on ***Login*** form.

5.2 Add Dog



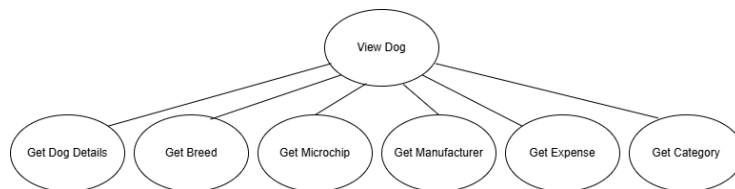
- **Lock Types:** Write on DOG, BREED, MICROCHIP, and MANUFACTURER tables.
- **Enabling Conditions:** User must be logged in and shelter can't be full.

- **Frequency:** Dogs surrendered per day.
 - **Schemas:** Several different schemas required.
 - **Consistency:** Not critical.
 - **Subtasks:** No mother task, no decomposition.
-

- Display form with inputs:
 - **dogName:** text box
 - **breeds:** multi-select dropdown
 - * Multiple selections allowed
 - * If “Unknown” OR “Mixed” selected:
 - Disable other selections
 - **sex:** radio button
 - * “Male”
 - * “Female”
 - * “Unknown”
 - **altered:** radio button
 - * “Yes”
 - * “No”
 - **age:** two input boxes
 - * **year:** converted into months (default value: 0)
 - * **months**
 - **description:** text box input (optional)
 - **manufacturer:** dropdown (nullable)
 - **microChipID:** dropdown
 - * Disabled until a manufacturer is chosen (default value: null)
 - * Dropdown values update once a manufacturer is selected
 - * Nullable, must be unique per dog
 - **surrenderDate:** calendar input
 - **surrenderPhone:** number input
 - * If **byAnimalControl** is true, input is required
 - * Else, optional
 - **byAnimalControl:** radio button
 - * “Yes”
 - * “No”

- Verify if dog is bulldog breed and named “Uga”
 - If true - display error: name not allowed
- Upon:
 - Click **Submit** Button: display options **Dog Details** or **Return to Dashboard** links
 - * Click **Dog Details** → Jump to the **Dog Detail** task
 - * Click **Return to Dashboard** → Jump to the **Dog Dashboard** task

5.3 View Dog



- **Lock Types:** Read on DOG, BREED, EXPENSE, CATEGORY, MICROCHIP, and MANUFACTURER tables.
- **Enabling Conditions:** User must be logged in. Dog information must be entered.
- **Frequency:** Often.
- **Schemas:** Several different schema structures needed.
- **Consistency:** Not critical, this is where edits are made.
- **Subtasks:** Mother task required, decomposition required. Order of subtasks not necessary, but they must be done (Get Dog Details, Get Breed, Get Microchip, Get Manufacturer).

-
- Display dog profile with:
 - **dogName**
 - **breeds** (forward slash-separated in alphabetical if multiple)
 - **sex**
 - **altered** status
 - **age** (displayed in years and months)
 - **description** (if available)

- **manufacturer** (if applicable)
- **microChipID** (if applicable)
- **surrenderDate**
- **surrenderPhone** (if applicable)
- **byAnimalControl** status
- Display expenses section:
 - * **totalExpense** per vendor
 - * Add all **totalExpense** and display as **grandTotal**
- If user.**age** is greater than 18:
 - * Display **Enter New Expense** link
- If **user** is Director and dog.**microChipID** is not NULL and dog.**altered** is true -Display **Add Adoption** button

5.4 Update Dog Information



- **Lock Types:** Writes on BREED, DOG, and MICROCHIP.
- **Enabling Conditions:** User must be logged in. Dog information must be entered. Executive Director can add adoption.
- **Frequency:** Often.
- **Schemas:** Several different schema structures needed.
- **Consistency:** Not critical, only one person can do this at a time.
- **Subtasks:** No mother task, no decomposition.

-
- Upon:
 - Click **Enter New Expense link** then jump to **Expenses** task
 - Click **Add Application** button then jump to **Add Application** task
 - If a dog is adopted, disable everything
 - **dogName** (Disabled)

- **breeds** (If unknown or mixed, editable. Otherwise, disable)
- **sex** (If unknown, editable. Otherwise, disable)
- **altered** status (If false, editable. Otherwise, disable)
- **age** (disabled)
- **description** (disabled)
- **manufacturer** (If null and user.age greater than 18, editable. Update microChipID dropdown.)
- **microChipID** (If manufacturer is not null and user.age is greater than 18, editable.)
- **surrenderDate** (disabled)
- **surrenderPhone** (disabled)
- **byAnimalControl** status (disabled)

5.5 Add Expenses



- **Lock Types:** Writes on EXPENSE and reads on CATEGORY.
- **Enabling Conditions:** User must be logged in and at least 18.
- **Frequency:** Often.
- **Schemas:** Several different schemas required.
- **Consistency:** Not critical.
- **Subtasks:** No mother task, no decomposition.

-
- Display form with inputs:
 - **expenseDate:** calendar input
 - **vendorName:** text box
 - **amount:** double
 - **expenseCategory:** dropdown
 - Submission conditions:
 - If dog has not been adopted and dog is surrendered:

- * Allow submit
- If (**expenseCategory** exists and **currentDate** is true) OR user.**age** is less than 18:
 - * Do not allow submit

5.6 Adoption Review



- **Lock Types:** Reads on ADOPTER and APPLICATION. Writes on APPLICATION.
- **Enabling Conditions:** User must be logged in and must be executive director.
- **Frequency:** Number of adoption applications submitted.
- **Schemas:** Several different schemas required.
- **Consistency:** Not critical.
- **Subtasks:** Mother task required, decomposition required. Order of subtasks not necessary, but they must be done (Find Applications).

-
- Display pending applications and applicant contact information.
 - Display table containing:
 - Applications in **Pending** state.
 - Applicant contact details:
 - * **firstName**
 - * **lastName**
 - * **Address:**
 - **street**
 - **city**
 - **state**

- **zipCode**
- * **phoneNumber**
- * **emailAddress**
- Buttons for:
 - * **Approve**
 - * **Reject**

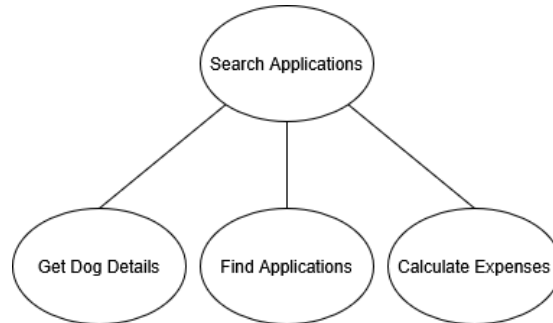
5.7 Add Application



- **Lock Types:** Writes on APPLICATION and ADOPTER.
- **Enabling Conditions:** User must be logged in.
- **Frequency:** Amount of dogs adopted.
- **Schemas:** Several different schemas required.
- **Consistency:** Critical, need to be sure we don't do two applications a day.
- **Subtasks:** No mother task, no decomposition.

-
- Display form with inputs:
 - **firstName:** text box
 - **lastName:** text box
 - **street:** text box
 - **city:** text box
 - **state:** text box
 - **zipCode:** number input (numbers only)
 - **phoneNumber:** number input (numbers only)
 - **emailAddress:** text box
 - **householdSize:** number input (numbers only)
 - **applicationStatus** will be set to "Pending" upon submission.
 - Submission conditions:
 - If **emailAddress** and **dateOfApplication** exist:
 - * Display error message indicating only one application per day is allowed.

5.8 Search Applications



- **Lock Types:** Read on APPLICATION, EXPENSE, and DOG.
- **Enabling Conditions:** User must be logged in and must be executive director.
- **Frequency:** Amount of dogs adopted approved.
- **Schemas:** Several different schema structures needed.
- **Consistency:** Critical, needs to reflect all applications for the dog.
- **Subtasks:** Mother task required, decomposition required. Order of sub-tasks not necessary, but they must be done (Get Dog Details, Calculate Expenses, Find Applications).

-
- Display search input box:
 - Look up via applicant's **lastName** (case insensitive)
 - Display list of applicants with:
 - **firstName** + **lastName** (clickable link)
 - Address: **street**, **city**, **state**, **zipCode**
 - **phoneNumber**
 - **emailAddress**
 - **householdSize**
 - Upon selecting an applicant (via **firstName** + **lastName** link):
 - Display most recent application
 - Calculate and display **adoptionFee**:
 - * If dog's **breeds** contains "Terrier" and dog's **name** is "Side-ways", set **adoptionFee** to 0

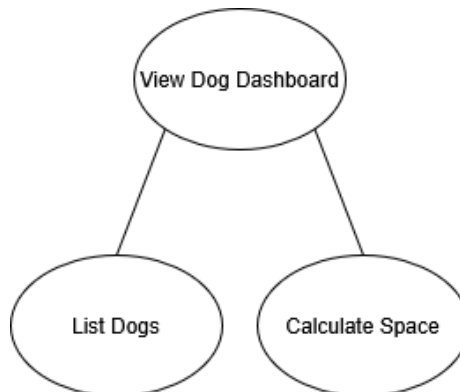
5.9 Set Adoption Date



- **Lock Types:** Writes on APPLICATION.
- **Enabling Conditions:** User must be logged in and must be executive director.
- **Frequency:** Amount of dogs adopted approved.
- **Schemas:** Several different schema structures needed.
- **Consistency:** Not critical.
- **Subtasks:** No mother task, no decomposition.

-
- Upon entering **adoptionDate**:
 - Display confirmation screen with:
 - * Dog name
 - * Adopter contact info
 - * Adoption fee
 - * Adoption date
 - Display **Submit** button:
 - * Disabled if **microchipId** is null and **altered** is false

5.10 View Dog Dashboard

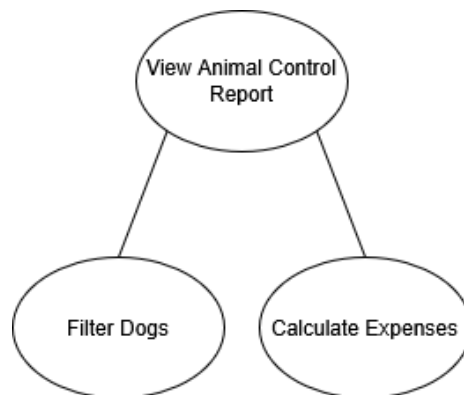


- **Lock Types:** Read on DOG.
 - **Enabling Conditions:** User must be logged in.
 - **Frequency:** Number of dogs and applications being added per day.
 - **Schemas:** Several different schema structures needed.
 - **Consistency:** Critical, need to know if dog has been adopted.
 - **Subtasks:** Mother task required, decomposition required. Order of sub-tasks not necessary, but they must be done (List Dogs, Calculate Space).
-

- Calculable available space:
 - $\text{availableSpace} = \text{maxCapacity} - \text{currentNumberOfDogs}$
- Display the following:
 - **Add Adoption Application** button
 - If **maxCapacity** is greater than **currentNumberOfDogs**
 - * Display **Add Dog** button
 - **Filter** dropdown
- If user is a director:
 - Display the following:
 - * **Adoption Application Review** button
 - * **Animal Control Report** button
 - * **Monthly Adoption Report** button
 - * **Expense Analysis** button
 - * **Volunteer Lookup** button
 - * **Volunteer Birthdays** button
- Display Available Space: {**availableSpace**}
- Display all dogs currently in shelter in a table:
 - Columns: *dogName* (clickable link), *breeds*, *sex*, *altered*, *age*, and *adoptability*
 - Order dogs oldest to newest by *surrenderDate*
- If user selects a value from the **Filter** dropdown:
 - If value is adoptable:
 - * Display in table dogs that are only adoptable
 - Else if value is not adoptable:

- * Display in table dogs that are not adoptable
 - Else if value is All (default):
 - * Display all dogs in table
- Upon:
 - Click **dogName** link - Jump to the **Dog Detail** task
 - Click **Adoption Application Review** button - Jump to the **Adoption Application Review** task
 - Click **Animal Control Report** button - Jump to the **Animal Control Report** task
 - Click **Monthly Adoption Report** button - Jump to the **Monthly Adoption Report** task
 - Click **Expense Analysis** button - Jump to the **Expense Analysis** task
 - Click **Volunteer Lookup** button - Jump to the **Volunteer Lookup** task
 - Click **Volunteer Birthdays** button - Jump to the **Volunteer Birthdays** task
 - Click **Add Adoption Application** button - Jump to the **Add Adoption Application** task
 - Click **Add Dog** button - Jump to the **Add Dog** task

5.11 View Animal Control Report



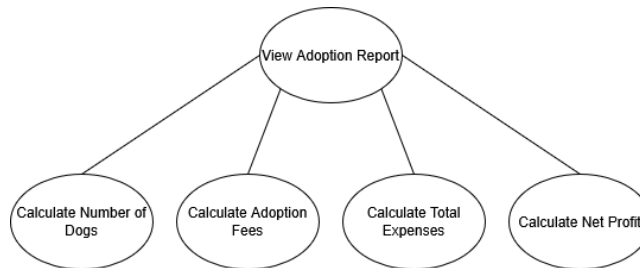
- **Lock Types:** Read on DOG, BREEDS, MICROCHIP, CATEGORY, and EXPENSE.
- **Enabling Conditions:** User must be logged in and be executive director.
- **Frequency:** At least monthly.

- **Schemas:** Several different schema structures needed.
 - **Consistency:** Critical to the day.
 - **Subtasks:** Mother task required, decomposition required. Order of subtasks not necessary, but they must be done (Filter Dogs, Calculate Expenses).
-

- Display table with:
 - Rows: One for each month (current month plus previous 6 months):
 - Columns:
 - * Month (start/end dates)
 - * Count of dogs surrendered by animal control (clickable)
 - * Count of dogs adopted after 60+ days in rescue (clickable)
 - * Total expenses for adopted dogs
 - * If `dog.byAnimalControl` is true:
 - exclude from expense
 - * Current month row shows data up to current date
 - * Each count/total is clickable and displays corresponding drill-down report
 - Upon clicking a cell, display corresponding drill-down report:
 - **Animal Control Surrenders Drill Down**
 - * Display table with columns:
 - **dogID**
 - **breeds** (forward slash-separated in alphabetical if multiple)
 - **sex**
 - **altered**
 - **microChipID**
 - **surrenderDate**
 - * Sort by **dogID** ascending
 - **Dogs Adopted (60+ days) Drill-down**
 - * Display table with columns:
 - **dogID**
 - **breeds** (forward slash-separated in alphabetical if multiple)
 - **sex**
 - **microChipID**
 - **surrenderDate**

- **daysInRescue** (count includes both surrender and adoption dates)
- * Sort **daysInRescue** descending then **dogID** descending
- **Adopted Dogs Expenses Drill-down**
 - * Display table with columns:
 - **dogID**
 - **breeds** (forward slash-separated in alphabetical if multiple)
 - **sex**
 - **microChipID**
 - **surrenderDate**
 - **byAnimalControl** indicator
 - **totalExpenses** (exclude from expense if dog.byAnimalControl is true)
 - * Sort by **dogID** ascending

5.12 View Adoption Report

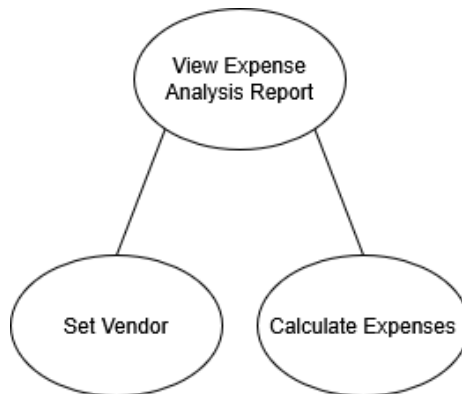


- **Lock Types:** Read on DOG, BREEDS, and EXPENSE.
- **Enabling Conditions:** User must be logged in and be executive director.
- **Frequency:** At least yearly.
- **Schemas:** Several different schema structures needed.
- **Consistency:** Not critical.
- **Subtasks:** Mother task required, decomposition required. Order of subtasks not necessary, but they must be done (Calculate Number of Dogs, Calculate Adoption Fees, Calculate Total Expenses, Calculate Net Profit).

-
- Display table for previous 12 months (excluding current month):
 - Columns:

- * Month/Year
- * Number of dogs surrendered
- * Number of dogs adopted
- * Total expenses (exclude from expense if dog.byAnimalControl is true)
- * Total adoption fees (Calculate Per Dog)
 - If **dog.byAnimalControl** is true: (**adoptionFee** = **totalExpenses** / 0.10)
 - Else: (**adoptionFee** = **totalExpenses** / 1.25)
- * Net Profit:
 - **totalAdoptionFees** - **totalExpenses**
- * Group Rows by Breed:
 - Show only breeds adopted/surrendered in 12-month period
 - For multiple breeds, combine names alphabetically with delimiter
- * Sort by:
 - Month ascending (earliest to latest)
 - Breed name alphabetically

5.13 View Expense Analysis Report

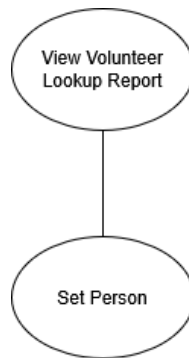


- **Lock Types:** Reads on DOG and EXPENSE.
- **Enabling Conditions:** User must be logged in and be executive director.
- **Frequency:** Often.
- **Schemas:** Several different schema structures needed.
- **Consistency:** Not critical.

- **Subtasks:** Mother task required, decomposition required. Order of subtasks not necessary, but they must be done (Set Vendor, Calculate Expenses).

-
- Display table with::
 - **vendorName:**
 - * If dog.by**AnimalControl** is true
 - Exclude from expenses
 - * Sort by **totalExpenses** descending:

5.14 View Volunteer Lookup Report



- **Lock Types:** Read on VOLUNTEER and PERSON.
- **Enabling Conditions:** User must be logged in and be executive director.
- **Frequency:** Often.
- **Schemas:** Single.
- **Consistency:** Not critical.
- **Subtasks:** Mother task required, decomposition required. Order of subtasks not necessary, but they must be done (Set Person).

-
- Search by first or last name containing (case insensitive)
 - Display:
 - * First name
 - * Last name
 - * Email address
 - * Phone number
 - Sort by last name ascending, first name ascending

5.15 View Volunteer Birthdays Report



- **Lock Types:** Reads on VOLUNTEER and PERSON.
- **Enabling Conditions:** User must be logged in and be executive director.
- **Frequency:** Daily.
- **Schemas:** Single.
- **Consistency:** Not critical.
- **Subtasks:** No mother task, no decomposition.

-
- Display month/year selection:
 - Dropdown with all months
 - Year options limited to current and previous year
 - Default to current month/year
 - For selected month:
 - If no birthdays: Display message "No volunteer birthdays this month!"
 - If birthdays exist, display table with:
 - * **firstName**
 - * **lastName**
 - * **emailAddress**
 - * **milestoneBirthday** (Yes/No for ages divisible by 10)
 - Sort by **lastName** ascending, then **firstName** ascending