



THE ULTIMATE FORAGING APP



Table of Contents

COVER PAGE.....	3
TEAM RESPONSIBILITIES.....	4
1)PROBLEM STATEMENT & REQUIREMENTS DEFINITION.....	5
2)DATABASE DESIGN.....	7
3)DATABASE IMPLEMENTATION.....	14
4)DATA.....	14
5)USER INTERFACE MOCKUPS.....	18
6)IMPLEMENTATION NARRATIVE.....	37
7)DEMONSTRATION VIDEO.....	41



FORAGER

Proposal for foraging for food database application



by Alejandro Alfaro, Jesse Coulson, Steven Mendez, and Nicholas Shaddox



Team Responsibilities*

Name	Phase 1	Phase 2	Phase 3
Jesse Coulson (Team Leader)	-Problem Statement -Making final proposal document -Phase 1 submission	-Relational Schema creation -DDL file creation -Drop script -Meta-data creation -Formatting final proposal document -Phase 2 submission	-Created add/update/remove for entities and create account functionalities of website -Add/remove/update queries of sql statements(vii) -Updated ER, Relational Schema, DDL, and DML to reflect changes from phase 2 -Phase 3 submission
Nicholas Shaddox (Vice Leader)	-Data Plan -Start on requirements analysis	-Data acquisition (all but water) -Insert DML script -Help debugging (inserts) -Query script	-Created plant, animal, and water, and suggestion pages -Selection queries (vii) -Updated multiple sections from phase 2 -Updated DML image links -Features Table -Document formatting
Alejandro Alfaro	-Start on ER -Coordinated meeting times & reserved study rooms	-Region map -Help debugging (inserts) -HTML training for phase 3	-Created region selection page -Helped with css -Created logout/back buttons to navigate website -Created data flow diagram
Steven Mendez	-Design of project proposal -Managed “to do” and questions list -Collaboration on all other sections*	-Wireframing -Updating use cases -Data acquisition (water)	-Created CSS for pages -Wireframe updates -Helped format document -Record video -Edit video

*We worked on finishing all the sections as a group which includes proofreading and making the video. We collaborated in person to complete all sections of the proposal.



1) Problem Statement & Requirements Definition

1.a) Problem Statement

Motivation: In the area around most people in America there are many places to hike and interact with nature, making this topic relevant to peoples' immediate lives. Foraging is a hobby that most people can pick up. Even if someone lives in a more urban area there are plants around them that if properly identified and prepared can be edible. Our project will help people learn more about nature around them by interacting with it.

Purpose: To create a website to educate people on how to forage for water, animals, and plants in their local area. This website will also warn people what wild vegetation and small game can be toxic. Forager will also explain the uses and properties of plants and animals such as how to prepare, consume, and use these foraged items for medicinal purposes. Forager will be able to concisely give information on how to find and use water sources in the wilderness. It can also be used beyond just a hobby, but also to help people in survival situations. Forager will explain thoroughly the main characteristics of what to look for and also have pictures for reference so that it is very clear what vegetation to approach.



1.b) Requirements Analysis

Scope: Our data will be mostly text with images for a regional map and images for the foraged item to help with identifying the items. The images will end up taking more space than the text and we do not have a server that can manage the amount of images required for a “full” database. We will use images links from wikipedia and direct the user to that site through the link or embed the image from the image source destination. (Show the image on our site but not save it in the database)

End User Requirements: The end users will only be required to supply information regarding account creation in the form of an email address, first name, last name, account type(admin or user), and password. This applies to admins and users. End users will also have an option to submit a form with suggestions of missing information or correcting misinformation.

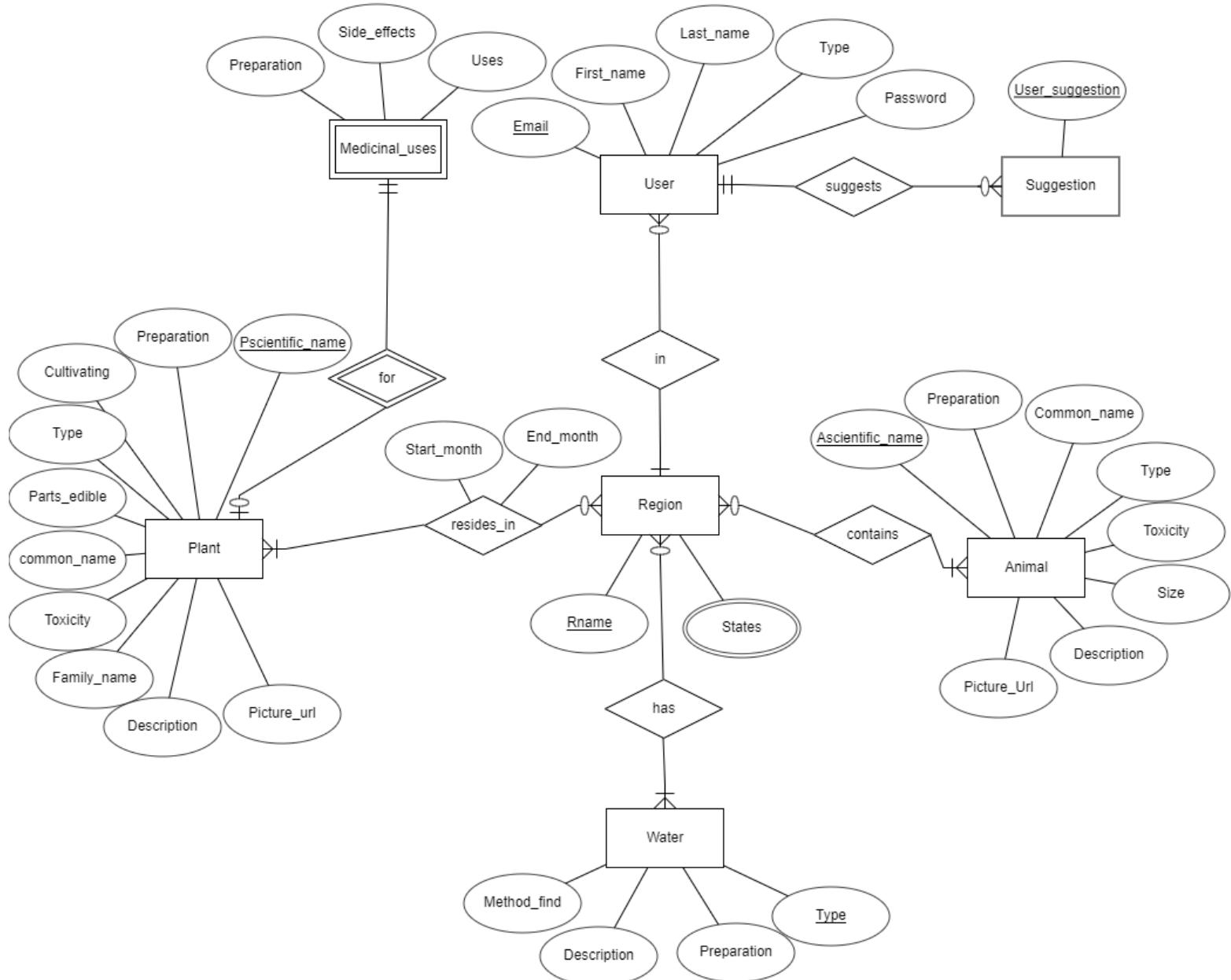
Out of scope: This was intended to be used when the website was going to be a mobile application. They can also choose an emergency option which will allow them to add emergency contact information. This information can then be used by the application to email, text, and call to inform the contact that the end user has not checked in with the application when they said they were going to. That information will contain the end user's email and location.

Primary Goals:

- 1) Educate people with no experience on how to properly identify plants and small game.
- 2) Help people be able to find water sources and how to treat the water to be drinkable.
- 3) To warn people what vegetation in their area is dangerous.
- 4) Teach people how to properly prepare what they foraged to be eaten.
- 5) Have many pictures to help identify the foraged items.
- 7) Display information about foraged items relevant to the user’s region in our website.
- 8) Contain Information on how to find and prepare water for safe consumption.
- 9) Let the end user submit feedback.

2) Database Design

2.a) Conceptual Model (ER Model)

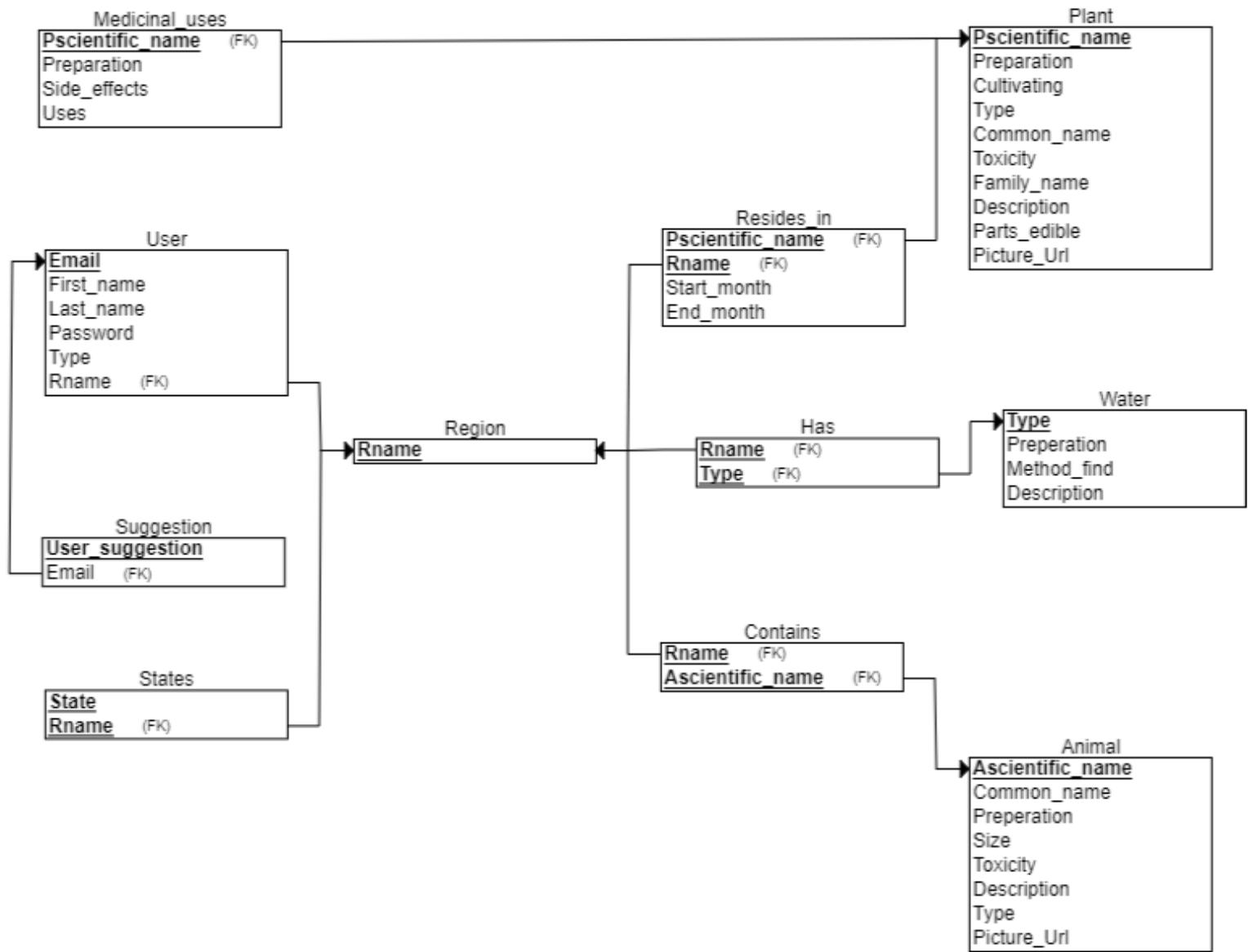


Phase 3 ER diagram update:

Removed water from being connected to the user to being connected to the region.

Took out an equipment entity that we were not going to implement. We moved the start and end month of a season to the resides_in relationship from being an attribute of the plant so that season is now linked to the region. Made a new entity called suggestion for users to give feedback.

2.b) Logical Mapping (Relational Database Schema)





2.b) Meta-data

FORMAT:

Table

Attribute	Data Type	Domain/value set	Description
-----------	-----------	------------------	-------------

Region

Rname	ENUM('N', 'S', 'E', 'W')	Primary Key, Not Null	The abbreviation for the region we chose. We will have a map to show what a region is.
-------	--------------------------	-----------------------	--

Region primary key justification: The region name is going to be unique, there will be 4 options for what region it is, and is the only value in this table.

Plant

Pscientific_name	VARCHAR(40)	Primary Key, Not Null	The scientific name of the plant
Preparation	VARCHAR(1000)		Description of how to prepare the plant for consumption
Cultivating	VARCHAR(500)		Description of how to cultivate the plant
Type	VARCHAR(10)		The type of plant e.g nuts
Parts_edible	TINYTEXT		What part of the plant is edible
Common_name	VARCHAR(20)	Not Null	The common name of the plant
Toxicity	ENUM('Toxic', 'Safe')	Not Null	Shows whether the plant is toxic or safe
Family_name	VARCHAR(20)		The name of the family the plant belongs to



Description	VARCHAR(1000)		A description of the characteristics of the plant
Picture_URL	VARCHAR(2048)		Picture of a plant.

Plant primary key justification: The plant name is a unique identifier for which plant it is and it is the most important attribute to know about this table that everything is about this plant.

Animal

Ascientific_name	VARCHAR(40)	Primary Key, Not Null	Scientific name of the animal
Preparation	VARCHAR(1000)		Description of how to prepare the animal for consumption
Type	VARCHAR(20)		The type of animal
Common_name	VARCHAR(40)	Not Null	Common name of the animal
Toxicity	ENUM('Toxic', 'Safe')	Not Null	Shows whether the animal is toxic or safe
Size	VARCHAR(10)		Description of the size of animal e.g large or medium
Description	VARCHAR(1000)		Description of characteristics of the animal
Picture_URL	VARCHAR(2048)		Picture of animal

Animal primary key justification: The animal name is a unique identifier for which animal it is and it is the most important attribute to know about this table that everything is about this animal.

Water

Type	ENUM('Fresh', 'Salt', 'Foul')	Primary Key, Not Null	The type of water with three options
Preparation	VARCHAR(1000)	Not Null	Description of how to prepare the water for consumption



Method_find	TINYTEXT	Not Null	Description of how to find a water source
Description	VARCHAR(1000)		Description of characteristics of the water

Water primary key justification: The type of water is a unique identifier for water. Since for a water source they generally do not have a name like an animal, this is appropriate to use as the primary key because it shows what kind of water you are seeing information about.

States

Rname	ENUM('N', 'S', 'E', 'W')	Primary key, Foreign Key, Not Null	The abbreviation for the region we chose.
State	CHAR(2)	Primary Key, Not Null	An abbreviation for the state name

States primary key justification: This table is formed from a multivalued attribute so the primary key is the foreign key from the entity it was an attribute of and the primary key of its name because that is a unique identifier for which state it is.

User

Email	VARCHAR(40)	Primary Key, Not Null	The email of the forager
First_name	VARCHAR(20)		First name of forager
Last_name	VARCHAR(20)		Last name of forager
Rname	ENUM('N', 'S', 'E', 'W')	Foreign Key, Not Null	The abbreviation for the region we chose.
Password	VARCHAR(50)		Password for user email.

Forager primary key justification: The email will be unique, each user can only use one to sign up. It is more appropriate than name because multiple people could have the same name.

Medicinal_uses

Pscientific_name	VARCHAR(40)	Primary Key, Foreign	Scientific name of the
------------------	-------------	----------------------	------------------------



		Key, Not Null	plant
Preparation	VARCHAR(1000)		Description of how to prepare the plant for medicinal use
Side_effects	TINYTEXT		Description of side effects of using the plant
Uses	VARCHAR(500)	Not Null	Description of the uses of the plant

Medicinal_uses primary key justification: This table is formed from being a weak entity connected to Plant. So we use the primary key of Plant.

*For upscaling, our medicinal uses will be many to many. Right now in our implementation it is one to one because the plants only have one medical use. If upscaled plants would have multiple uses.

Resides_in

Pscientific_name	VARCHAR(40)	Primary Key, Foreign Key, Not Null	Scientific name of the plant
Rname	Rname ENUM('N', 'S', 'E', 'W')	Primary key, Foreign Key, Not Null	The abbreviation for the region we chose.
Start_month	ENUM('January', 'February', 'March', 'April', 'May', 'June', 'July', 'August', 'September', 'October', 'November', 'December')		Start month of harvest season
End_month	ENUM('January', 'February', 'March', 'April', 'May', 'June', 'July', 'August', 'September', 'October', 'November', 'December')		End month of harvest season

Resides_in primary key justification: This table is formed from an M to N relationship so the primary key is the foreign keys from the two tables it was a relationship for.



Contains

Rname	ENUM('N','S', 'E', 'W')	Primary Key, Foreign Key, Not Null	The abbreviation for the region we chose.
Ascientific_name	VARCHAR(40)	Primary key, Foreign Key, not null	Scientific name of the animal

Contains primary key justification: This table is formed from an M to N relationship so the primary key is the foreign keys from the two tables it was a relationship for.

Has

Rname		ENUM('N','S', 'E', 'W') NOT NULL, Primary Key	
Type		ENUM('Fresh', 'Salt', 'Foul') NOT NULL, Primary Key	

Has primary key justification: This table is an M to N relationship so the primary key is the foreign keys from two tables it was a relationship for.

Assumptions & implementation constraints

- New water cannot be added or removed. There are no more water types to add in our scope. Water can be updated such as the method to find.
- Treating types of plants and animals as enum on the website. On the database it is not enum because that would allow for upscaling.
- Region is not null for User because on the website when they create an account they select a region on the next page.
- Employee accounts are created manually through the database and not on the website.



3) Database Implementation

3.a) ii_Foraging_Describe.out

3.b) iii_Foraging_DDL.sql

3.c) iv_Foraging_Drop_All.sql

4) Data

4.a) Data Acquisition

Our sample data comes from many sources since there isn't a single data source available on the topic. The only data that has been artificially generated was the email, first name, and last name of the forager table. We used a program (created by us) to generate and format them as an insert.

The plant data was taken from three books and two websites. Books: Billy Joe Tatum's Wild Food Cookbook & Field Guide, Tom Brown's Guide to Wild Edible and Medicinal Plants, and Edible Wild Plants by Oliver Perry Medsger. Websites: <http://en.wikipedia.org> and <https://foodplantsinternational.com/plants/>.



The animal data was from two books and Wikipedia. Books: Hunting small game by Bert Popowski and The Hunter Encyclopedia. Wikipedia was mainly used for image references and descriptions. All books were borrowed from the library.

The water data was found in two locations. The first was in an article called “How to find drinkable water in the wild” by Popular Science at www.popsci.com. The second was in an article called “How to Find Water in the Wild” at www.artofmanliness.com.

Our database is very small considering the amount of data that there is on the subject. The database for plants had over three thousand plants listed and we only have 21. Our database includes a very small number of huntable animals and excludes large game.

As far as completing the data, we would allow user suggested inputs that are vetted by moderators and then approved by administrators. A community built database that can be used for educational purposes or hobbies.



4.a) Sample Datasets

*Since we have such long descriptions to properly identify, we limited all text to 10 characters on the table display by using substring so that it fits on this report. All tables limited to 3 tuples.

Email	First_name	Last_name	Rname
AbagailLinnea5730@Brodie.com	Abagail	Linnea	S
ApoloniaEmre6341@Toree.com	Apolonia	Emre	W
BrittaDerrious8244@Joi.com	Britta	Derrious	S

Rname	State		Rname
N	CO		N
N	IA		S
N	KS		E

Sci_name	Com_name	Fam_name	Description	Prep	Parts_edible	Cultivate	Toxicity	Start_month	End_month
Acorus Cal	Calamus Ro	Acoraceae	A marsh pl	The underg	The underg	Can be gro	safe	November	March
Amaranthus	Amaranth	Amaranthac	An annual	Vegetable	Vegetable	Cultivatio	toxic	July	October
Angelica a	Angelica	Apiaceae	A plant wh	The root,	The root,	Plants are	safe	June	October

Wtype	Prep	HowToFind	Description
Fresh	When hande	Running water and gr	Freshwater can be fo
Salt	DO NOT DRI	Salt water can be fo	Salt water is easily
Foul	DO NOT DRI	One way of spotting	Foul water can be id

Sci_name	Com_name	Perp	Description	Toxicity	Size
Colinus vi	Bobwhite Q	Game shoul	The northe	Safe	small
Lepus	Jack Rabbi	Must be co	Hares and	Safe	small
Lepus amer	Showshoe R	Must be co	The snowsh	Safe	small

Sci_name	Prep	Effects	Uses
Amaranthus	Boil until	Gastralint	Treats gas
Angelica a	Intended t	NULL	Used for s
Arctium la	Make tea f	May cause	Helps with



```

+-----+-----+
| Pscientific_name | Rname |
+-----+-----+
| Acorus Calamus | W |
| Amaranthus hybridus | N |
| Amaranthus hybridus | S |
|
+-----+-----+
| Rname | Ascientific_name |
+-----+-----+
| N | Colinus virginianus |
| N | Lepus |
| N | Lepus americanus |
+
+-----+-----+
| mail | Wtype |
+-----+
libBjorn3858@Ranee.com | Salt |
apriceEstaban2856@Jacobi.com | Foul |
lestinaTashawna6336@Thea.com | Salt |

```

4.b) v_Foraging_DML.sql

4.c) vi Foraging_Database_Dump.out



5) User Interface Mockups

5.a) Use Cases

Admins: wireframe

- Change data in water entity in database 5
- Change data in animals entity in database 5
- Change data in plants entity in database 5
- Add new data to water entity in database 5
- Add new data to animals entity in database 5
- Add new data to plants entity in database 5
- Update page for employee 6
- Create an admin account
 - not created, accounts are made manually by existing employee
- Login to admin account 1

End Users:

- Create a regular account 1
- Login to regular account 1
- User selects region 2
- User selects what entity they want information about(water, animals, or plants) 3
- User selects what information they want from entity 4

NOTE wireframe 5 is for employees to update and change database clicking button will lead to page like wireframe 6



5.b) Wireframes

Login page 1)

The wireframe shows a web browser window with the URL www.survivalforaging.com/loginpage. The main content area contains a large rectangular input field at the top right. Below it is a form enclosed in a vertical border:

- An "email" input field.
- An input field with masked text ("*****").
- A checkbox labeled "employee yes no" with the checked option selected.
- A "submit" button.
- The word "or" centered below the "submit" button.
- A "create account" button at the bottom.



Region page 2)

wwwsurvivalforaging.com/region

The wireframe shows a browser window with the URL 'wwwsurvivalforaging.com/region' at the top. The main content area contains a large rectangular placeholder labeled 'map image' with a large 'X' drawn through it. To the right of the map is a vertical column containing four radio button options: 'west' (selected), 'south', 'north', and 'east'. Below this column is a 'submit' button. In the bottom right corner of the page is a red-bordered 'logout' button.

map image

west
south
north
east

submit

logout



Options page 3)

wwwsurvivalforaging.com/options

please select one of the following options to query

example table

<input type="checkbox"/>	Country	Companies
<input checked="" type="checkbox"/>	USA	Apple Inc , Microsoft
<input type="checkbox"/>	Sweden	IKEA Furnitures , Spotify
<input checked="" type="checkbox"/>	Finland	Nokia Communications



Plant page 4)

com_name (scientific name)

prep

edible parts

plant image

back

logout



Employee options 5)

www.survivalforaging.com/update

welcome employee

choose a database to update

animal plant water employee

back logout



Employee Update page 6)

www.survivalforaging.com/updateuserdatabase

enter the information you want to update

email

first

last

is employee

region_enum

password



5.c) High Fidelity Screenshots

These numbers do not match the low-fidelity mockups

Maria DB Login Page 1)

The screenshot shows a web browser window with the URL https://www.ecst.csuchico.edu/~aalfaro5/foraging/maria_db.php. The page has a dark blue background with a starry texture. At the top center, it says "Foraging for Food". Below this, in a white box, it says "Mariadb Login Below". It contains two input fields: one for "Enter Mariadb_Username:" and another for "Enter password:". A "Submit" button is located below the password field. The browser interface at the top includes a back/forward button, a refresh button, and a search/address bar.

Foraging for Food

Mariadb Login Below

Enter Mariadb_Username:

Enter password:

Submit



User/Employee Login Page 2)

A screenshot of a web browser window showing a login page. The background of the page is a photograph of a snowy mountain range under a dark sky with a full moon. The browser title bar says "user log in" and the address bar shows "ecst.csuchico.edu/~aalfaro5/foraging/login_page.php". The main content area has a light blue header with the text "Foraging for Food". Below this is a large rectangular form box with a black border. Inside the box, the word "Login" is centered above two input fields: "Email:" and "Password:", each with a white input box. Below these is a checkbox labeled "Are you an Employee?". Underneath the checkbox are two buttons: "Submit" and "Create Account". The word "or" is centered between the "Submit" and "Create Account" buttons.

user log in

ecst.csuchico.edu/~aalfaro5/foraging/login_page.php

Foraging for Food

Login

Email:

Password:

Are you an Employee?

or



Employee Choice Page 3)

The screenshot shows a web browser window with the URL https://www.ecst.csuchico.edu/~aalfaro5/foraging/employee_choice.php. The page title is "Foraging for Food". On the left is a "Back" button, and on the right is a "Logout" button. The main content area has a dark background with white text. It starts with "Welcome employee" in large font, followed by "Choose what category you would like to change" in bold. Below this is a list of categories with radio buttons:

- Animal
- Plant
- Water (cannot add or remove water)
- User

Below the categories is the instruction "Choose what you would like to do to that category". There are three large, empty rectangular boxes side-by-side:

- Update the database
- Add to the database
- Remove from the database



Plant Add Page 4)

https://www.ecst.csuchico.edu/~ ecst.csuchico.edu/~aalfaro5/foraging/add.php Back

Adding to the Plant database

Enter the plant information you want to add to the database then submit

Scientific Name:*

Preparation :

Cultivating information :

Type:

Edible parts:

Common name:*

Toxicity*("safe" or "toxic"):

Family name:

Description :

Picture url:

* = required information



Animal Update Page 5)

https://www.ecst.csuchico.edu/~aalfaro5/foraging/update.php

Updating the animal database

Enter the Scientific name of the animal you want to update database

Scientific Name:

Enter the information you want updated then press submit

Preparation:

Common name:

Type:

Toxicity("safe" or "toxic"):

Size:

Description:

Picture url:

Display of scientific names of animals in database

Colinus virginianus
Lepus
Lepus americanus
Phasianus colchicus
Sciurus aberti
Sciurus carolinensis
Sciurus niger
Sylvilagus
Tamiasciurus douglasii
Tamiasciurus hudsonicus
Tympanuchus cupido
Tympanuchus phasianellus

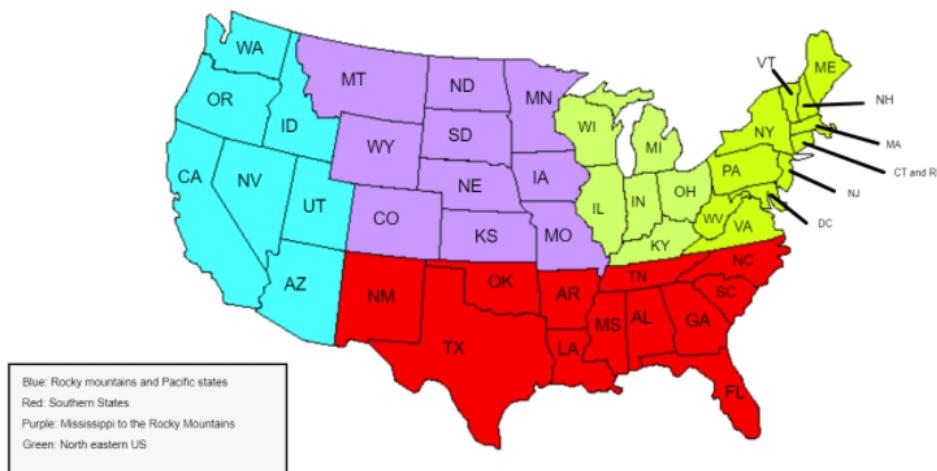


Region Select Page 6)

The screenshot shows a web browser window with the URL <https://www.ecst.csuchico.edu/~aalfaro5/foraging/region.php>. The page title is "Map".

Map

US Regional Map



Select a region for foraging information.

- West: Rocky Mountains and Pacific States
- South: Southern States
- North: Mississippi to the Rocky Mountains
- East: North Eastern US



Plant Type Page 7)

https://www.ecst.csuchico.edu/~... X +
ecst.csuchico.edu/~aalfaro5/foraging/plant_type.php

Query Selection In The Western Region

Back to entity select: [back](#)

Select a plant type

[Herb](#) [Fungi](#) [Nut](#) [Fruit](#) [Cactus](#)

Selecting the common name and description from every herb in the western region.

Calamus Root

A marsh plant. It is a herb with stout branched underground stems which have an aroma. It continues growing from year to year. It grows to 1 m high and 0.5 m across. The underground stems can be 2 m long and 0.5-1.5 cm wide. The leaves are flat, smooth and 25 to 60 cm long and 1 to 1.5 cm wide. They are sword shaped but flexible. The leaves also have a strong smell. The veins in the leaf run along the leaf. The mid vein

[Calamus Root](#)

Amaranth

An annual herb. It is an upright plant. It grows 80 cm to 2 m tall. It is often green but can be dark red. The leaves are simple and alternate. The leaves are oval shaped and can be 15 cm long. The flowers can be red, yellow or white. They are in spikes at the top of the plant and in the axils of leaves. The seeds are small and shiny and black.

[Amaranth](#)

Burdock

A tall growing herb or shrub which takes two years from planting to flower and seed production. Plants can be 2 m tall. The plant forms a clump of very large, grey-green wavy-edged leaves. The leaves can be 50 cm long. The leaves and stems are covered with fine hairs. The leaves are paler underneath. In the second year a tall branched flower stalk 2 m tall grows from the centre of the clump. There are many flowers which

[Burdock](#)

Milkweed

A herb that keeps growing from year to year. A plant that sprouts like asparagus. The shoots can be 1 m tall. It contains milky juice. The leaves are large and opposite or in rings. They are oblong and pointed at the tip. They are thick and leathery. The flowers occur in a cluster. They are purple. The fruit are pods that are pointed. They occur in pairs.

[Milkweed](#)

Chicory

A perennial herb up to 1 m high. It forms clumps. It has white, milky sap when parts are broken off. Kinds have been selected either for their fattened edible roots or for their edible leaves. The plant has a large taproot. The leaves are sword shaped and have teeth along the edge. The leaves form a cluster around the base of the plant. They



Plant Information Page 8)

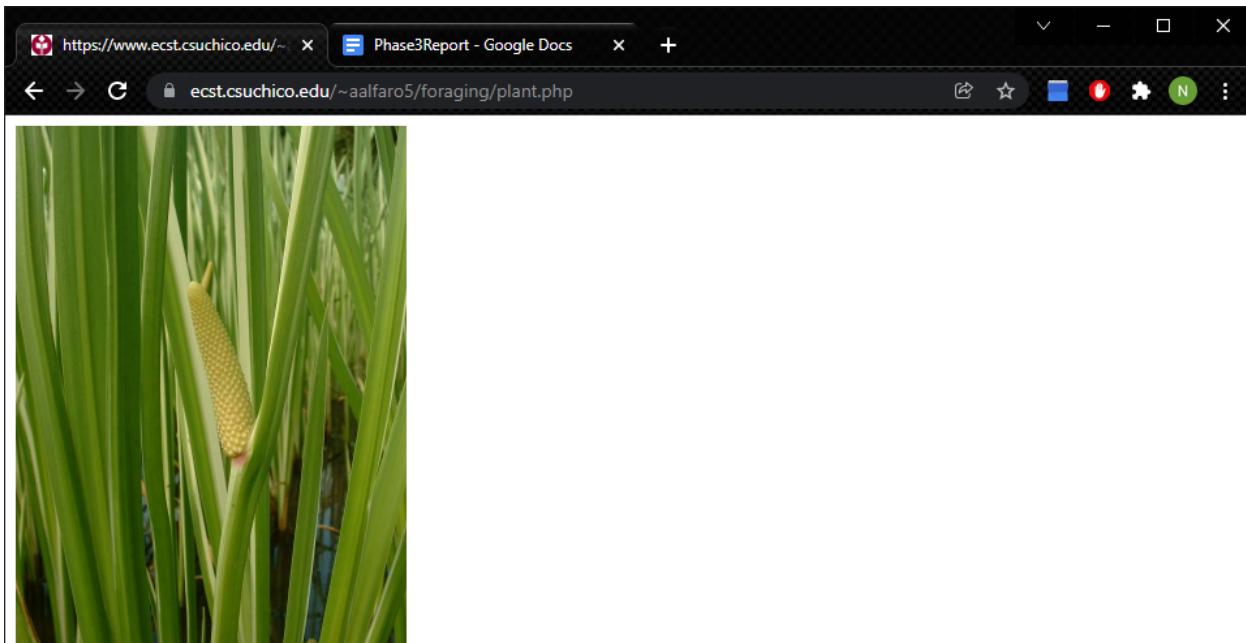


Image Source: Wikipedia

Calamus Root (Acorus Calamus)

A marsh plant. It is a herb with stout branched underground stems which have an aroma. It continues growing from year to year. It grows to 1 m high and 0.5 m across. The underground stems can be 2 m long and 0.5-1.5 cm wide. The leaves are flat, smooth and 25 to 60 cm long and 1 to 1.5 cm wide. They are sword shaped but flexible. The leaves also have a strong smell. The veins in the leaf run along the leaf. The mid vein

Preparation

The underground stems are ground and used to flavour food. They can be eaten raw. They have a gingery peppery taste. It should probably only be eaten sparingly with caution. They contain a bitter glucoside called acorin. The forms of Acorus in Asia contain a chemical called asarone which causes cancer. The centre of the above ground section can be eaten. The underground stem can be washed, peeled, chopped into 1 cm long

Toxicity: safe

Edible Parts

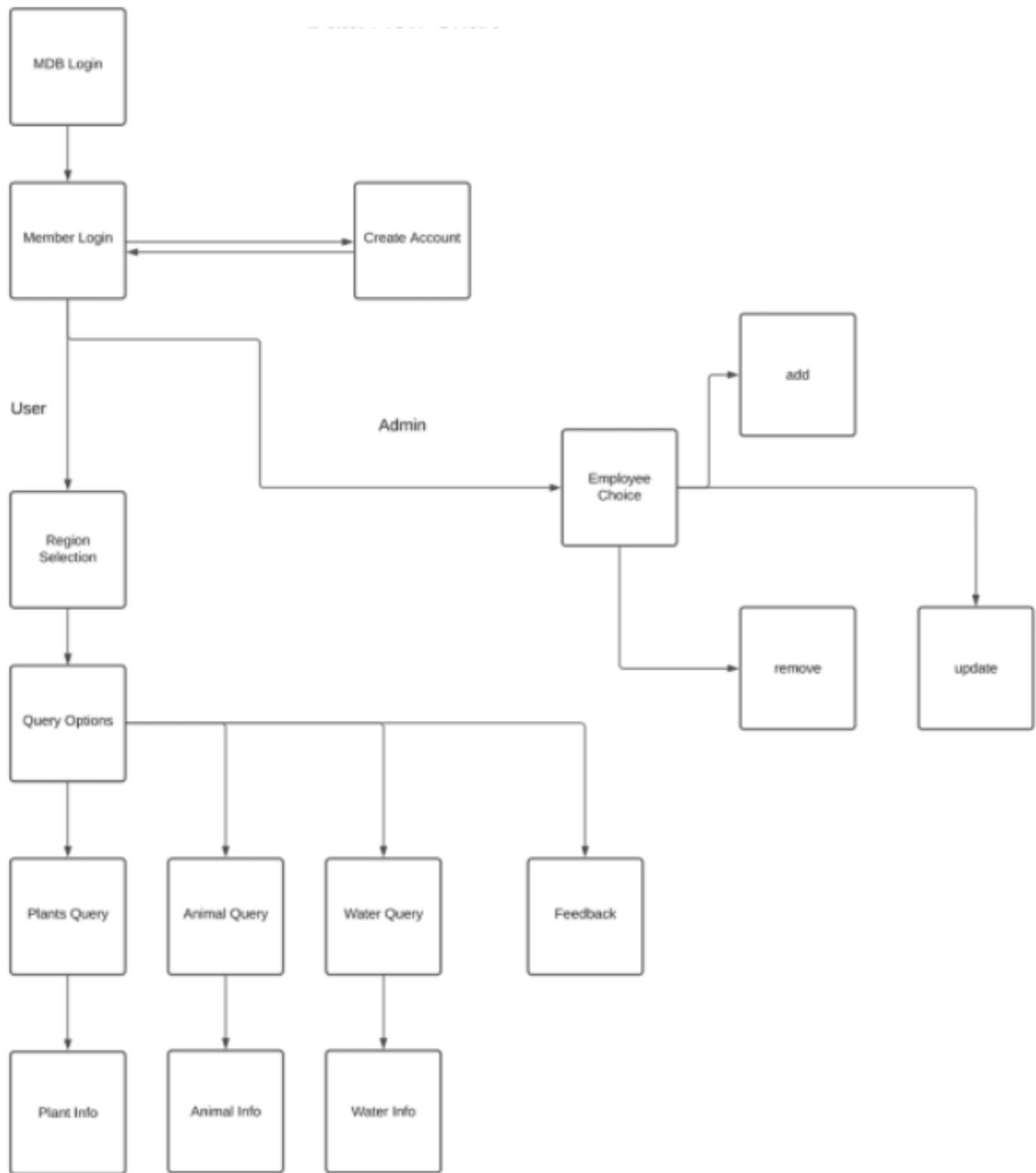
Roots, Rhizome, Leaves, Stems, Herb, Spice

[Back](#)

[Logout](#)



5.d) Data Flow Diagram





5.e) vii_Foraging_statements.sql

This example complex aggregate query is showing the number of plants per region.

```
MySQL [jccoulson]> SELECT Rname as Region, COUNT(Pscientific_name) as Number_of_plants
-> FROM Plant
-> JOIN Resides_in using (Pscientific_name)
-> JOIN Region using (Rname)
-> GROUP BY Rname
-> having resides_in.Rname = Rname;
+-----+
| Region | Number_of_plants |
+-----+
| N      |          8 |
| S      |         13 |
| E      |         11 |
| W      |         12 |
+-----+
```

5.f) viii_Foraging_Website_Prototype.tar

Working website link:<https://www.ecst.csuchico.edu/~aalfaro5/foraging/>

We created pages that implemented all our use cases on this document. We start with a mariadb login page(maria_db.php) where anyone can enter their username and password and it connects to their database. So they have to have run our DDL and DML code so their database is properly filled.

It then takes them to a login page(login_page.php) where they have an option to log in with a known account, and check whether they are an employee or not. They can also select to create an account on the login page. If they click the create account button they will be brought to the create account page(create_account.php) where they enter information for the account they are creating.



Once they enter that information a regular user is added to the database with the entered attributes (name, email etc.). After creating an account they are brought back to the login page. Once someone logs in with a regular account, where they did not indicate that they were an employee and their email and password match to someone in the database, they are brought to the region selection page(region.php).

Here is a map of the United States showing what states are in what region. To query information about a given region they select that region and submit. They are then brought to a page where they want to make a suggestion or whether they want to query plants, animals, or water(options.php). If they click a suggestion they are brought to a suggestion page(suggestion.php) where they can enter whatever text feedback they want into a text box and submit. Their suggestion is then entered into the database into the suggestion table which keeps track of who entered it. If they click to query animal, water ,or plant on the options page they are brought to a page where they have to select the type of animal, water, or plant(animal_type, plant_type, water_type).

Once they click what type they want it displays a description of the animals of that type and a button underneath to click for more information. This next page(plant.php, animal.php, water.php) displays an image of the item chosen and some of its attributes. This concludes all a user can do.

Going back to the login page, if they are an employee and mark a checkbox that they are an employee, they are then brought to an options page for employees (employee_choice.php). From employee choice the employee chooses what they want to add, update, or remove from animal, plant, water or user. Water can only be updated. Once they click add they are brought to a page (add.php) where they enter the information of the new item they want to add, then it is



entered into the database with the given information. If they click update from the employee choice page they are brought to a page (update.php) where there are text boxes for each of the attributes of the entity.

On this update page are all the primary keys of the entity so they can easily know the exact name they want to update, because plant/animal scientific names are complicated. They enter the key of the entity they want to change, then enter whatever attributes they want updated, they can change however many attributes they want. The database is then updated to reflect their changes.

On the employee options page if they choose to remove they are brought to a new page(remove.php). The remove page also displayed the primary keys for the same reason as the update page. They enter the key of the thing they want removed from the given table and then after they submit it is deleted from the database. That is all the special employee functionality. If an employee wants to query they can log in with their account and not checkmark they are an employee and they are treated as a regular user. Most of these pages have a functional log out button that logs the current user out of their database and brings them to the mariadb login page. Most of these pages also have a back button that brings the user to the previous page.



6) Implementation Narrative

6.a) Development and Deployment Systems

Maria DB: Is the database management system used to communicate with the database.

We make all our queries through Maria DB. The connections are made on each page that makes a query(select, insert, update, etc..). We also close that connection to the database once that query is done.

HTML: The Hyper Text Markup Language is used for creating the backbone of the website.. HTML is used to create components like text on the screen, input boxes for user inputs, and buttons to redirect pages.

PHP: Is the scripting language we used to perform any logic operations in the code. This would include situations like clicking a button, checking the contents of a text box, connecting to Maria DB, and saving session variables to be used across different pages.

CSS: Cascading Style Sheets is used to help beautify websites. This includes, giving texts special effects like glowing, aligning the text, boxes, and buttons, setting background images, and customizing the font.



6.b) Application Procedures

PHP: There are actions that modify the database using php once you perform certain actions such as clicking an html button or entering text into a text box. For example in remove.php you enter a primary key of animal, plant, or user. If you enter a plant scientific name into the text box then click the remove button, in php it reads in the scientific name variable you entered and puts it into a delete statement and removes it from the database. We have many actions like that to query, add, update, and remove from the database.

HTML: Some HTML features that we decided to incorporate into our website include, back / logout buttons, and header tags. One downside of HTML is it being “bare bones” in the sense that it is not appealing to the eye, but that is where CSS comes into play.

CSS: CSS was used for the website backgrounds on some of the pages (not all because of time constraints) it was also used to concurrently with html to create header banners, as well as boxes to go along with text to make everything neater (again not on all pages due to time constraints). Another cool feature with using css was creating classes that included HTML buttons, and text to style and organize for example putting the <body> within a transparent box to make a nice padded out border surrounding the text and buttons.

Image files: In our submissions we have .jpeg files, this goes along with the CSS portion and it is for the web page backgrounds in some of the pages. With the exception of the region's map. All other images (like plants, animals, and water) are image links directly from wikipedia.



6.c) Features Table

# of Physical tables	# of views (derived tables)	# of UI pages	# of queries and updates	Total Constraints				Tools Summary
				FKs	!NULL	Unique	Other	
11	1	16	Greater Than 20	10	22	0	0	PHP, HTML, CSS, MARIADB

6.d) Challenges

I think scope with regards to the data was our biggest challenge. On the outside, a database for foraging seems pretty simple and straightforward but when you start diving into the details, there is so much information to sort through. The amount of time it took to collect the data was way more than we were expecting. To solve this problem, we indeed ended up limiting some tables and filling up some tables that were a little easier to get the information for.

We had many challenges with issues on use cases that were addressed by the professor on phase 2. We were not completely clear what scope use cases should be around. For phase 3 we managed to compress our use cases way down and now we have implemented all the use cases listed on the page.

Another issue is the scope of the website. Although we were not required to fully implement our website, we ended up doing more than was required. We also made the time to clean up the look of some, if not all, of the pages with CSS during the last couple of days.



6.e) Project Status

Fully Developed:

- Connection page to Maria DB, login page for user and employee(admin), region selection page, all entity query pages, employee options page to select the entity and action (add, remove, or update), and the corresponding page for that entity + action selection.

Partially Developed:

- One thing we were not able to implement fully was design features (CSS) on all the web pages, because we decided to make a lot of pages, and time was not on our side.

Remaining:

- Making more advanced queries use the state table. Although each region has many states, we never actually use the states table in our website. We only show an image which represents the states that are in the region.
- Did not implement the download feature for the regions, but for future expansion this could be a possibility
- Emergency contact was not implemented but for future expansions this could be a possibility

** Things not implemented were due to time constraints **



6.e) Final Remarks

- Images for website background were found and used from pexels
<https://www.pexels.com/search/website%20background%20nature/>
- The final version of the website is at url:
<https://www.ecst.csuchico.edu/~aalfaro5/foraging/>
- To use website when you log into your mariadb you need to have sourced our DDL and DML in your database
- Employee login information is in the DM. Since creating an employee requires administrative access, the only way to access the employee web pages requires looking in the database.

7) Demonstration Video

ix_Foraging_Demo_Video.mp4