

Pet Connect

By

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ACRONYMS AND ABBREVIATIONS

AWS: Amazon Web Services

GUI: Graphical User Interface

ORM: Object Relational Mapper

WBS: Work Breakdown Structure

ABSTRACT

According to the American Kennel Club (Donovan, 2019), socializing a dog with humans and other dogs is an important part of the training process that when properly implemented, can lead to a happy and healthy life for the dog. Pet Connect provides users with a website designed with their dog's social needs in mind. Users can register and create a profile for their dog(s) that showcases their personality and physical traits. They can also add family members to their dog's profile. With their account, they can view profiles for other local dogs and reach out to their owners to see if their dogs are compatible. Currently there are no websites like Pet Connect that have a household feature and a list filtering option. Pet Connect brings dog owners together and provides a platform that promotes socially enriching interactions for their dogs.

PROBLEM STATEMENT

INTRODUCTION

The reported number of dogs in the United States ranges from 77 to 90 million (Brulliard and Clement, 2019). While that number is wildly debated in the pet community, no matter where the exact number falls in that range there are tens of millions of dogs that require love, attention, and care on a daily basis. With such a booming market, it is a wonder that no all-encompassing application exists that addresses one of the most important activities – socialization. According to the American Kennel Club, dogs that are properly socialized live happier and healthier lives so it is critical that owners have the proper resources and that those resources work for them (Donovan, 2019). With the application Pet Connect, the team hopes to address the issues dog owners have with the current applications that exist and they hope to provide users with an application they are excited to use.

This report introduces the web application Pet Connect. The team will cover why this application is a necessity for the dog community and why it is the best application of its kind out there on the market. The team discusses who their users are and what they expect their experience level to be as well as how they expect them to interact with Pet Connect. All of the Pet Connect features are outlined in detail within this report, and the timeline for creating these features is shown as well. Next, the team showcases the various pages of the website with pictures and descriptions. With this report the team hopes to provide a clear

understanding of what Pet Connect is, why it needs to exist, and why it should be the consumer's number one choice.

PROBLEM

Socializing a dog with humans and other dogs is an important part of the training process. It's so crucial that the American Kennel Society recommends introducing puppies to new people and dogs within the first 7 weeks to 4 months of their life. Getting an early jump on socialization helps teach puppies how to react to their environment in a positive manner. With that said, if that critical window is missed dogs can still be trained to properly react to strangers, both human and dog, it might just take longer and require more positive reinforcement and praise. According to PetMed, properly socializing a dog can have health benefits on top of the benefits of being able to trust the dog in social situations. This is because dogs that are not properly socialized can have increased stress and are more likely to be overweight or obese, both of which can lead to heart issues.

Right now the best way to find events for dogs is by word of mouth, dog classes, and Google searches. However, none of those options are specifically catered for the dog and their personality. Typically those events incorporate a wide variety of dogs of varying sizes, ages, and personalities. Through research, it was discovered that there are at least two other apps similar to the team's idea – MeetMyDog and BarkHappy. However, both are missing the household feature and list filtering features the team plans to include in their design. Users of

MeetMyDog and BarkHappy seem to have issues with setting up accounts and finding detailed profiles – with Pet Connect they will be able to create their accounts with ease and highlight important details about their dog(s). There was another website that was found called datemydog, however that is more focused on finding a partner for the dog owner. There were no other notable websites or applications discovered that compared to the team’s idea, as most were focused on pet advice and posting pictures.

SOLUTION

Pet Connect is a web application designed with the intent of providing dog owners a personalized experience for setting up playdates for their dog(s). Dog owners can create unique profiles for their dog(s) to showcase their physical traits, personalities, likes, and dislikes. If the profile is created for a family pet, the profile creator will be labeled as the “Head of Household” and they can add (or remove) family members to their dog’s profile. Once linked up, family members will be able to notify others in their group of the dog’s availability. Once their profile is created users can interact with other profiles to find another dog(s) their furry friend may like to meet up with. Dog owners can narrow down the list they are presented with based on characteristics so that they are seeing the most eligible pups for their dog. Owners can communicate and set up a playdate for their dogs all within the confines of the web app. Users can discuss a location in the chat and go to Google Maps to find a location that is equidistant, neutral, and safe for their dogs to play. Pet Connect does have some similar characteristics

as its competitors, but what really helps it stand out is the Household feature and the filtering feature for the dog profiles.

The target audience for Pet Connect is dog owners. This web application is great for all dog owners because it can be difficult for individuals living in the city, the suburbs, and the country to find practical and personalized ways to socialize their dogs. The Pet Connect web app will be their go-to place for finding an enriching social experience for their furry friends. Pet Connect will be mobile friendly so that users can stay in contact on the go and while trying to meet up at their meeting place. The target users should also be familiar with social media and how to interact with such a platform. In order to get the most out of the Pet Connect web application the users need to be familiar with setting up online accounts, chatting with people online, navigating a web page, and posting pictures online.

PROJECT DESCRIPTION

Pet Connect is a cross-platform web application hosted on an AWS (Amazon Web Services) server. Users can register for an account and create their dogs' household, which may contain just them and their dog(s) or they could add family members so they too have access to profile(s). Once the account is created, users can create profiles for their dog(s) that highlight their personality and physical traits. They can add both written descriptions and photos to accomplish this task. Users can then scroll through the profiles of other dogs in their area and if they see a dog they think their's will get along with they can reach out to

the other owner via the in-app chat feature. If they agree to meet up for their dogs to have a playdate they can use the chat feature to discuss a location and use GoogleMaps to find a location that is equidistant, neutral, and safe for them to meet up. If they have a good interaction they can choose to follow each other on Pet Connect so that they can schedule meet-ups in the future. They will also be able to share pictures and videos of their play-dates on the social media type wall on the Pet Connect website.

USER PROFILE

There are three types of users interacting with the web-application Pet-Connect. The first users described are the web developers (Figure 1: User Profile Web Developer) who will be maintaining the website after its creation. The second user group is made up of the dog owners (end users) – head of households (Figure 2: User Profile – Head of Household) and family members (Figure 3: User Profile – Family Members) – whom the web application is created for.

USER PROFILE 1



APPLICATION

Amazon Web Services (AWS), GitHub, Flask, Bootstrap, MySQL, HTML, CSS, and Linux command line.

POTENTIAL USERS

Web developers/administrators

SOFTWARE AND INTERFACE EXPERIENCE

The user should be familiar with the GUI and command line used in the application's creation. The user should also be familiar with AWS and the coding used in the creation of the web application.

EXPERIENCE WITH SIMILAR APPLICATIONS

Need to be familiar with the languages used in the creation of the web application. Should also be familiar with GitHub and AWS.

TASK EXPERIENCE

Using the aforementioned applications in the creation and maintenance of the web application Pet Connect.

FREQUENCY OF USE

Once the website is created, the user will only interact with the application as needed. The user will interact with the web application after its creation to stay compliant with security requirements, to correct application bugs discovered after launch, and to update features based on end user comments.

KEY INTERFACE DESIGN REQUIREMENTS THAT THE PROFILE SUGGESTS

This user will need to be able to work with the programming languages and interfaces to create and maintain the website properly.

Figure 1: User Profile – Web Developer

USER PROFILE 2



APPLICATION

The Pet Connect web application

POTENTIAL USERS

Head of Household

SOFTWARE AND INTERFACE EXPERIENCE

User should have experience using the Internet and a social media website.

EXPERIENCE WITH SIMILAR APPLICATIONS

Google Chrome, Safari, Firefox, Internet Explorer, Facebook, Tinder, Bumble, Instagram, Twitter, Google Maps.

TASK EXPERIENCE

Basic web page interactions – using the mouse to click specific areas on the web page, the keyboard to type messages, and uploading images to their profile.

FREQUENCY OF USE

Whenever the users’ needs access Pet Connect, which could be constantly, daily, monthly, or yearly.

KEY INTERFACE DESIGN REQUIREMENTS THAT THE PROFILE SUGGESTS

The website needs to be secure, easily accessible to the user, and easily navigated by the user.

Figure 2: User Profile – Head of Household

USER PROFILE 3



APPLICATION

The Pet Connect web application

POTENTIAL USERS

Family Members

SOFTWARE AND INTERFACE EXPERIENCE

User should have experience using the Internet

and a social media website.

EXPERIENCE WITH SIMILAR APPLICATIONS

Google Chrome, Safari, Firefox, Internet Explorer, Facebook, Tinder, Bumble, Instagram, Twitter, Google Maps.

TASK EXPERIENCE

Basic web page interactions – using the mouse to click specific areas on the web page, the keyboard to type messages, and uploading images to their profile.

FREQUENCY OF USE

Whenever the users’ needs access Pet Connect, which could be constantly, daily, monthly, or yearly.

KEY INTERFACE DESIGN REQUIREMENTS THAT THE PROFILE SUGGESTS

The website needs to be secure, easily accessible to the user, and easily navigated by the user.

Figure 3: User Profile – Family Members

USE CASE DIAGRAM

The use case diagram (Figure 4: Use Case Diagram for Pet Connect) shows how the team expects their users to interact with Pet Connect. They determined that there are three types of users: head of household (dog owner), family member (dog owner), and web developer/admin. While the head of household and family member users have many similar interactions with the website, the head of household user has additional options. The head of household users can add and remove family members from their dog's profile because they are the original creators of the dog's profile. Both of the dog owner user groups can interact with the website in the following methods: create profile, customize profile, login, upload pictures, update calendar, scroll through profiles, friend other users, chat with users, schedule playdates, and find a location to meet.

The third user group consists of the web developers/admins. This group has access to the frontend and backend of the website. On the frontend, this user group is responsible for bug fixes and adding features. This means, as users, provide feedback the developers will be responsible for determining which features are the most important to add to and for facilitating their creation. They are also responsible for correcting bugs in the code as they occur. On the backend, they are responsible for database, security, and server maintenance. They are responsible for ensuring everything is up-to-date and functioning properly so that Pet Connect can continually be used.

Use Case Diagram for PetConnect

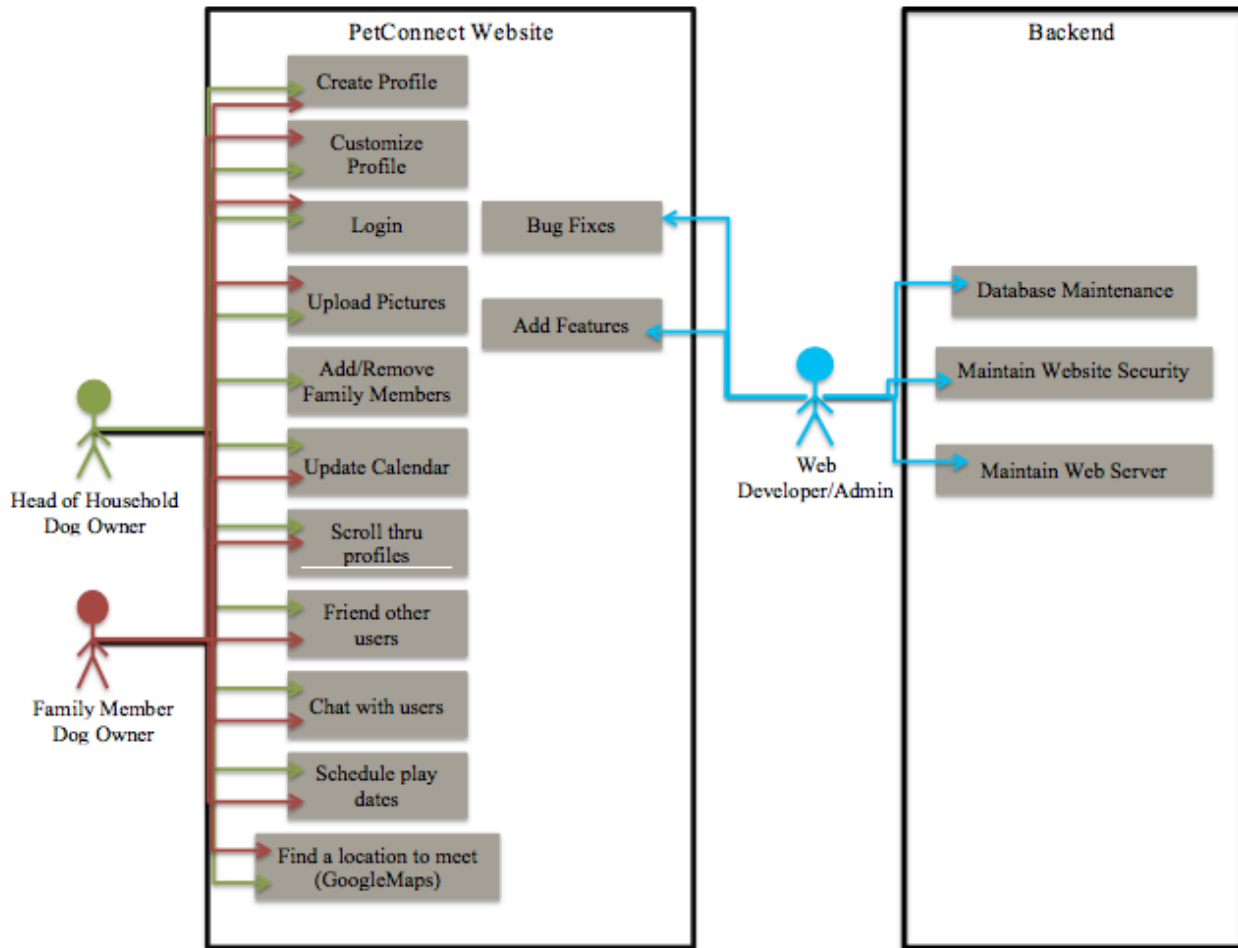


Figure 4: Use Case Diagram for Pet Connect

PROJECT MANAGEMENT

BUDGET

Below in Table 1: Budget, is the estimated budget for creating Pet Connect from the ground up. Since work hours were not tracked during the duration of project completion, the numbers provided for hours worked are rough estimates for each team member. The estimated numbers are based on the estimated time for class work (1 hour per credit per week – 6 credits so 6 hours per week) with an additional 2 hours per week to account for unforeseen complications. Time spent per week varied depending on difficulty of task with the amount of time spent per week being either greater or less than 10 hours. The total estimated hours spent working on this project between the Fall and Spring semesters is 930 hours and the cost of labor per hour is \$20 which puts the total cost of labor at \$18,600. Outside of labor, the prices for hosting and assigning a domain name to the website were also calculated. The price for hosting the website on AWS is an annual charge of \$100 and the price for a domain name is an annual charge of \$21.52. The total price for a year came out to \$121.52. The overall total for labor and the website came out to \$18,721.52.

Item	Unit (days)	Unit (weeks)	Unit (hours worked over weeks)	Unit (Price)	Line Item Total
Labor (Fall)	103	15	450	\$20.00	\$9,000.00
	Hours/Week	Weeks			
Madison (PM)	10	15	150	\$20.00	
Larry (Developer)	10	15	150	\$20.00	
Matt (Developer)	10	15	150	\$20.00	
Item	Unit (days)	Unit (weeks)	Unit (hours worked over weeks)	Unit (Price)	Line Item Total
Labor (Spring)	109	16	480	\$20.00	\$9,600.00
	Hours/Week	Weeks			
Madison (PM)	10	16	160	\$20.00	
Larry (Developer)	10	16	160	\$20.00	
Matt (Developer)	10	16	160	\$20.00	
Item	Unit (days)	Unit (weeks)	Unit (years)	Unit (Price)	Line Item Total
Web Hosting	365	52	1	\$100.00	\$100.00
Domain Name	365	52	1	\$21.52	\$21.52
Total					\$18,721.52

Table 1: Budget

OBJECTIVES/DELIVERABLES

The team developed a cross-platform website where dog owners create profiles for their dogs and interact with other local dog owners to schedule a playdate. Pet Connect provides dog owners with a platform specifically catered to their pet's socialization needs. Users are able to distinguish a "head of household" and add/remove family members to their dog's profile. Owners can accomplish the entire process of setting up a playdate on the web application. They can view others' profiles, communicate with other owners, and use the message feature to discuss a neutral, equidistant, and safe location for them to host a playdate.

Pet Connect is a website developed with a fresh and modern design. Developers used Flask, Bootstrap, MySQL, SQLAlchemy, and AWS to fulfill all aforementioned goals. These tools allowed the developers to create a platform that is user-friendly, safe, and visually appealing.

Pet Connect's Features will include the following:

- Dog owners can create a profile for their dog(s) showcasing their personality with pictures and descriptions of their likes and dislikes.
- The user that creates the profile is designated as the "Head of Household" and controls which family members they wish to add to their dog's profile.
- Members of the dog's household can notify each other of their dog's availability.
- Users can view other dog's profiles and request to communicate.
- Owners can communicate within the website to discuss plans to meetup.
- Owners can create groups for group playdates.
- Owners can share pictures and comments.

Laying out the entire list of features with a schedule helped the developers to accomplish their tasks. One feature the developers wished they could have included was Google Maps integration, but unfortunately they were unable to figure out how to incorporate the feature into the website. While users may not be able to locate a park in the website, they can discuss potential meeting locations in the chat feature of the website. Even though the team encountered this

shortcoming, they were able to accomplish the remaining promised features for the website. The developers (Matt and Larry) had a system where they worked on the various features for Pet Connect and tested each as they went to ensure the work they were doing was operational.

PROJECT SCHEDULE

The Gantt Chart (split between Figure 5: Gantt Chart Pt. 1 and Figure 6: Gantt Chart Pt. 2), shows all of the work the team performed over the Fall and Spring semesters. Every step is accounted for, and each had an allotted amount of time for completion. The blue lines represent the section and the purple lines represent the components that make up each section. The gray bar in December represents the break between the fall and spring semesters. The Gantt Chart is more-so a visual representation of the time allotted for each section of the project, where as the work breakdown structure (Table 2: Work Breakdown Structure), which can be seen below Figure 6: Gantt Chart Pt. 2, simply lists each required step and the dates dedicated to each section.

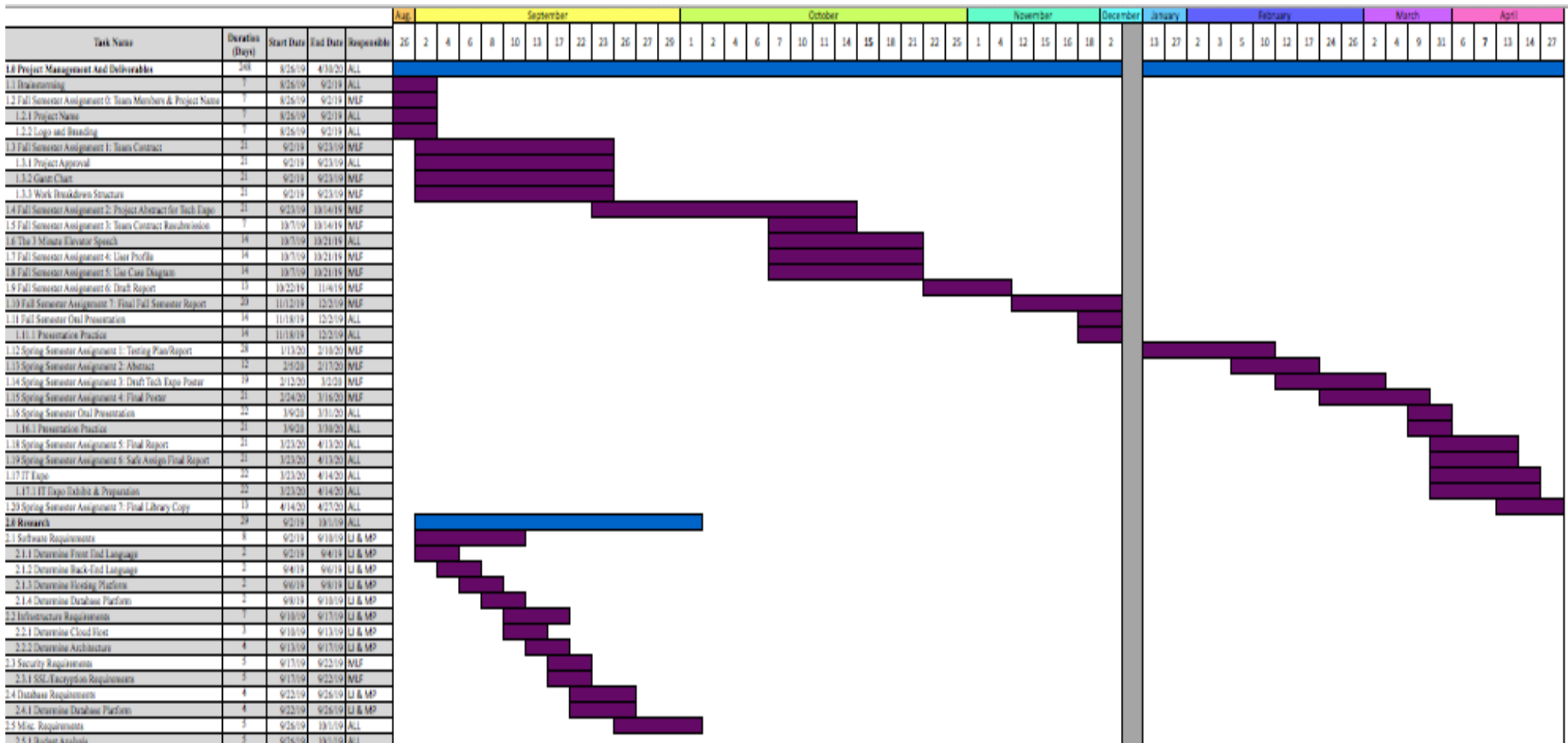


Figure 5: Gantt chart Pt. 1

System Design	31	9/13/19	10/14/19	ALL
1 Create System Diagrams	18	9/13/19	9/23/19	U & MP
1.1.1 Create Infrastructure Diagrams	18	9/13/19	9/23/19	U & MP
1.1.2 Create Database Diagrams	18	9/13/19	9/23/19	U & MP
1.1.3 Create Workflow Diagrams	18	9/13/19	9/23/19	U & MP
2 Create Legal Documentation	17	9/23/19	10/14/19	MLF
2.1 Create Legal Disclaimers and Privacy Policy	17	9/23/19	10/14/19	MLF
Infrastructure Creation	18	9/23/19	10/15/19	U & MP
1 Provision Cloud Servers	7	9/23/19	10/4/19	U & MP
4.1.1 Determine Hardware Requirements	2	9/23/19	9/28/19	U & MP
4.1.2 Provision Backend Server	3	9/28/19	10/2/19	U & MP
4.1.3 Provision Database Server	2	10/2/19	10/4/19	U & MP
2 Version Control Setup	2	10/4/19	10/6/19	U & MP
4.2.1 Configure Github Repository	2	10/4/19	10/6/19	U & MP
3 Plan Database Schema	4	10/6/19	10/10/19	U & MP
4 Plan Front-End Framework	2	10/10/19	10/15/19	U & MP
4 Development (Front End and Back End)	180	10/4/19	4/1/20	U & MP
1 Create landing pages	18	10/4/19	10/18/19	U & MP
2 Implement Database Schema	18	10/4/19	10/18/19	U & MP
3 Design and Develop home page	7	10/11/19	10/18/19	U & MP
4 Create login and set up authentication	18	10/11/19	10/25/19	U & MP
5.4.1 User registration and confirmation	7	10/11/19	10/18/19	U & MP
5.4.2 Create forgot password	7	10/11/19	10/18/19	U & MP
5.4.3 Set up MySQL to handle sessions	14	10/11/19	10/25/19	U & MP
5 Develop Website Features	101	10/18/19	1/27/20	U & MP
5.5.1 Develop owner's pet profile feature	14	10/18/19	11/1/19	U & MP
5.5.2 Develop head of household profile feature	14	10/18/19	11/1/19	U & MP
5.5.3 Develop family member profile feature	14	11/1/19	11/15/19	U & MP
5.5.4 Develop dog availability/calendar feature	14	11/1/19	11/15/19	U & MP
5.5.6 Develop chat feature	14	11/1/19	11/15/19	U & MP
5.5.7 Develop playdate group feature	14	1/13/20	1/27/20	U & MP
5.5.5 Develop profile gallery feature	14	1/13/20	1/27/20	U & MP
5.5.8 Develop Google Maps integration feature	14	1/13/20	1/27/20	U & MP
6 Fine Tune Infrastructure Needs	65	1/27/20	4/1/20	U & MP
5.6.1 Release patches	65	1/27/20	4/1/20	U & MP
6 Testing	35	1/13/20	4/7/20	U & MP
1 Conduct QA Tests	20	1/13/20	2/3/20	U & MP
2 Full Software Test	10	2/3/20	3/4/20	U & MP
3 Security Test	27	3/4/20	3/11/20	U & MP
4 Final Testing	15	3/23/20	4/7/20	U & MP

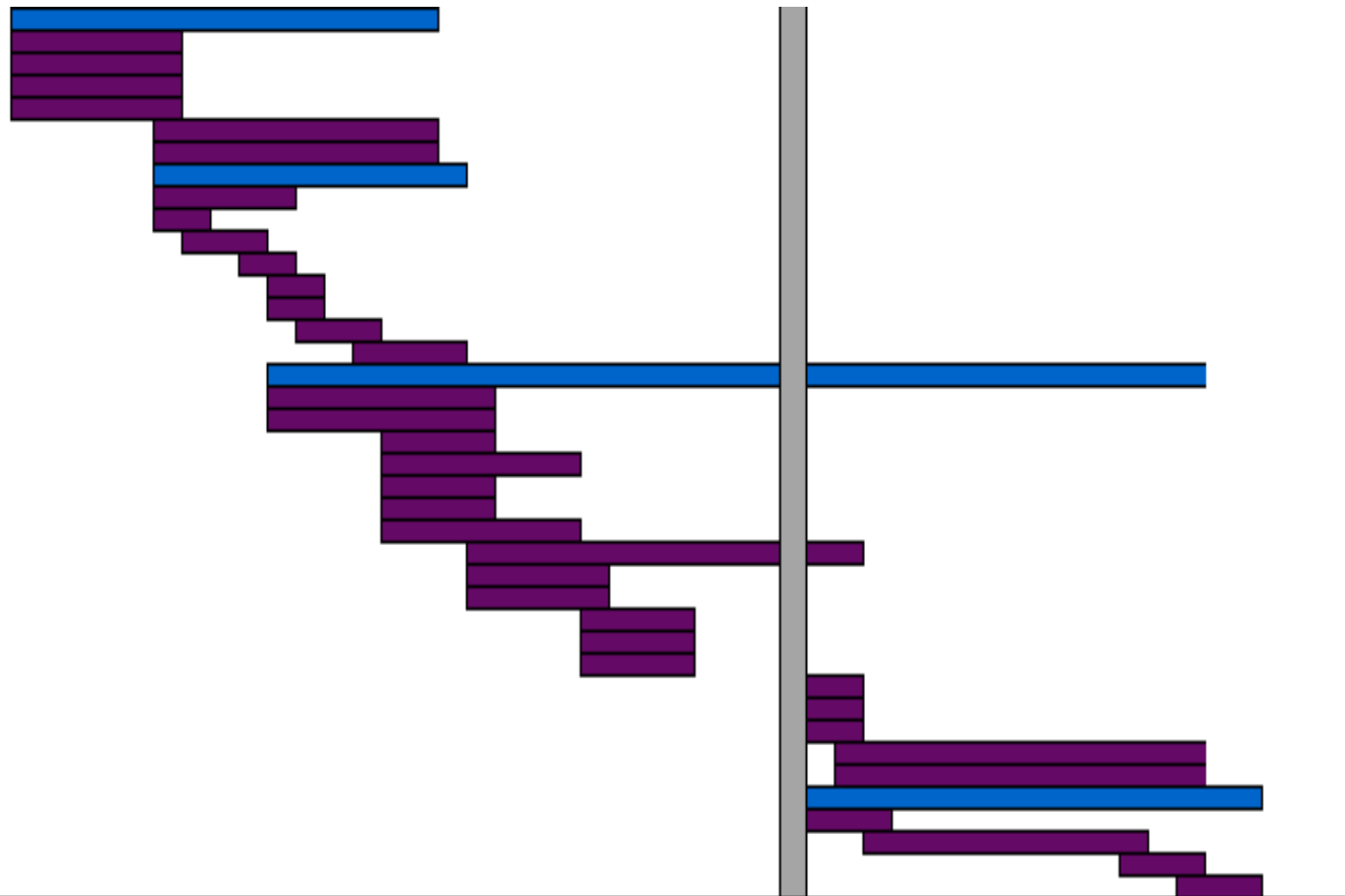


Figure 6: Gantt chart Pt. 2

Pet Connect WBS			
Task Name	Duration (Days)	Start Date	End Date
1.0 Project Management And Deliverables	245	8/26/19	4/27/20
1.1 Brainstorming	7	8/26/19	9/2/19
1.2 Fall Semester Assignment 0: Team Members & Project Name	7	8/26/19	9/2/19
1.2.1 Project Name	7	8/26/19	9/2/19
1.2.2 Logo and Branding	7	8/26/19	9/2/19
1.3 Fall Semester Assignment 1: Team Contract	21	9/2/19	9/23/19
1.3.1 Project Approval	21	9/2/19	9/23/19
1.3.2 Gantt Chart	21	9/2/19	9/23/19
1.3.3 Work Breakdown Structure	21	9/2/19	9/23/19
1.4 Fall Semester Assignment 2: Project Abstract for Tech Expo	21	9/23/19	10/14/19
1.5 Fall Semester Assignment 3: Team Contract Resubmission	7	10/7/19	10/14/19
1.6 The 3 Minute Elevator Speech	14	10/7/19	10/21/19
1.7 Fall Semester Assignment 4: User Profile	14	10/7/19	10/21/19
1.8 Fall Semester Assignment 5: Use Case Diagram	14	10/7/19	10/21/19
1.9 Fall Semester Assignment 6: Draft Report	13	10/22/19	11/4/19
1.10 Fall Semester Assignment 7: Final Fall Semester Report	20	11/12/19	12/2/19
1.11 Fall Semester Oral Presentation	14	11/18/19	12/2/19
1.11.1 Presentation Practice	14	11/18/19	12/2/19
1.12 Spring Semester Assignment 1: Testing Plan/Report	28	1/13/20	2/10/20
1.13 Spring Semester Assignment 2: Abstract	12	2/5/20	2/17/20
1.14 Spring Semester Assignment 3: Draft Tech Expo Poster	19	2/12/20	3/2/20
1.15 Spring Semester Assignment 4: Final Poster	21	2/24/20	3/16/20
1.16 Spring Semester Oral Presentation	22	3/9/20	3/31/20
1.16.1 Presentation Practice	21	3/9/20	3/30/20
1.18 Spring Semester Assignment 5: Final Report	21	3/23/20	4/13/20
1.19 Spring Semester Assignment 6: Safe Assign Final Report	21	3/23/20	4/13/20
1.17 IT Expo	22	3/23/20	4/14/20
1.17.1 IT Expo Exhibit & Preparation	22	3/23/20	4/14/20
1.20 Spring Semester Assignment 7: Final Library Copy	13	4/14/20	4/27/20
2.0 Research	29	9/2/19	10/1/19

2.1 Software Requirements	8	9/2/19	9/10/19
2.1.1 Determine Frontend Language	2	9/2/19	9/4/19
2.1.2 Determine Backend Language	2	9/4/19	9/6/19
2.1.3 Determine Hosting Platform	2	9/6/19	9/8/19
2.1.4 Determine Database Platform	2	9/8/19	9/10/19
2.2 Infrastructure Requirements	7	9/10/19	9/17/19
2.2.1 Determine Cloud Host	3	9/10/19	9/13/19
2.2.2 Determine Architecture	4	9/13/19	9/17/19
2.3 Security Requirements	5	9/17/19	9/22/19
2.3.1 SSL/Encryption Requirements	5	9/17/19	9/22/19
2.4 Database Requirements	4	9/22/19	9/26/19
2.4.1 Determine Database Platform	4	9/22/19	9/26/19
2.5 Misc. Requirements	5	9/26/19	10/1/19
2.5.1 Budget Analysis	5	9/26/19	10/1/19
3.0 System Design	31	9/13/19	10/14/19
3.1 Create System Diagrams	14	9/13/19	9/27/19
3.1.1 Create Infrastructure Diagrams	14	9/13/19	9/27/19
3.1.2 Create Database Diagrams	14	9/13/19	9/27/19
3.1.3 Create Workflow Diagram	14	9/13/19	9/27/19
3.2 Create Legal Documentation	17	9/27/19	10/14/19
3.2.1 Create Legal Disclaimers and Privacy Policy	17	9/27/19	10/14/19
4.0 Infrastructure Creation	18	9/27/19	10/15/19
4.1 Provision Cloud Servers	7	9/27/19	10/4/19
4.1.1 Determine Hardware Requirements	2	9/27/19	9/29/19
4.1.2 Provision Backend Server	3	9/29/19	10/2/19
4.1.3 Provision Database Server	2	10/2/19	10/4/19
4.2 Version Control Setup	2	10/4/19	10/6/19
4.2.1 Configure GitHub Repository	2	10/4/19	10/6/19
4.3 Plan Database Schema	4	10/6/19	10/10/19
4.4 Plan Frontend Framework	5	10/10/19	10/15/19
5.0 Development (Frontend and Backend)	180	10/4/19	4/1/20
5.1 Create Landing Pages	14	10/4/19	10/18/19
5.2 Implement Database Schema	14	10/4/19	10/18/19
5.3 Design and Develop Home Page	7	10/11/19	10/18/19
5.4 Create Login and Set Up Authentication	14	10/11/19	10/25/19
5.4.1 User Registration and Confirmation	7	10/11/19	10/18/19
5.4.2 Create Forgot Password	7	10/11/19	10/18/19
5.4.3 Set up MySQL to Handle Sessions	14	10/11/19	10/25/19
5.5 Develop Website Features	101	10/18/19	1/27/20
5.5.1 Develop Owner's Pet Profile Feature	14	10/18/19	11/1/19
5.5.2 Develop Head of Household Profile Feature	14	10/18/19	11/1/19
5.5.3 Develop Family Member Profile Feature	14	11/1/19	11/15/19

5.5.4 Develop Dog Availability/Calendar Feature	14	11/1/19	11/15/19
5.5.6 Develop Chat Feature	14	11/1/19	11/15/19
5.5.7 Develop Playdate Group Feature	14	1/13/20	1/27/20
5.5.5 Develop Profile Gallery Feature	14	1/13/20	1/27/20
5.5.8 Develop Google Maps Integration Feature	14	1/13/20	1/27/20
5.6 Fine Tune Infrastructure Needs	65	1/27/20	4/1/20
5.6.1 Release Patches	65	1/27/20	4/1/20
6.0 Testing	85	1/13/20	4/7/20
6.1 Gather QA Testers	20	1/13/20	2/2/20
6.2 Full Software Test	30	2/3/20	3/4/20
6.3 Security Test	26	3/4/20	3/30/20
6.4 Final Testing	15	3/23/20	4/7/20

Table 2: Work Breakdown Structure

TECHNICAL ELEMENTS

NETWORK

The Pet Connect web application is hosted on an AWS Ubuntu server. AWS was selected for its simplicity and ease of scalability. Matt created an account and he maintains the server. Matt also purchased a domain name for the website (Pet Connectproject.com:5000). The team adhered to this set up for the duration of the class and the server size did not need to be increased. If the team decides to continue with this project after the completion of the course, they will scale up the server size to accommodate the potential growth.

APPLICATION

The web developers (Matt and Larry) used a version of Python known as Flask for the development of the backend of Pet Connect. Matt and Larry selected this language because they have previous experience using Flask to develop websites. For the frontend styling and functionality, HTML, custom CSS, Jinja templating, and JavaScript were used. Again, the developers selected these languages because of their ease of use and the previous experience they had using them for development.

DATABASE

Pet Connect uses an Ubuntu MySQL database in AWS and an SQLAlchemy database for backend data. These platforms were selected by the web developers (Matt and Larry). They selected MySQL and SQLAlchemy because

they had previous experience developing databases with these platforms and thought they would work seamlessly with the selected languages. SQLAlchemy was not the original platform selected for the backend element; however, it proved to be better than the original selection because it had nicer integrated tools as compared to the original selection.

SECURITY

One of the web developers, Larry, was responsible for implementing the security for Pet Connect. For login, users must input a username (email) and their password. The user name and password are then checked against a stored, and hashed username and password to ensure the correct information was entered. The website is also set up to protect against cookie stealing, which means that users need a fresh login in order to change a password. The website it also set up to protect against cross-site forgery. This means that users are assigned a unique id on the backend and in order for that link to work they need that id number associated with their account. This means that if a user were to send a link from Pet Connect to someone while logged into their account, the other person would not have access to the page if they clicked on the link. These security measures were implemented to provide users with a safe and secure environment.

TECHNICAL ARCHITECTURE

Below in Figure 7: Technical Diagram, a visual representation of the technology used in this project can be seen. The figure shows how the different tools work together to present the website to the user.

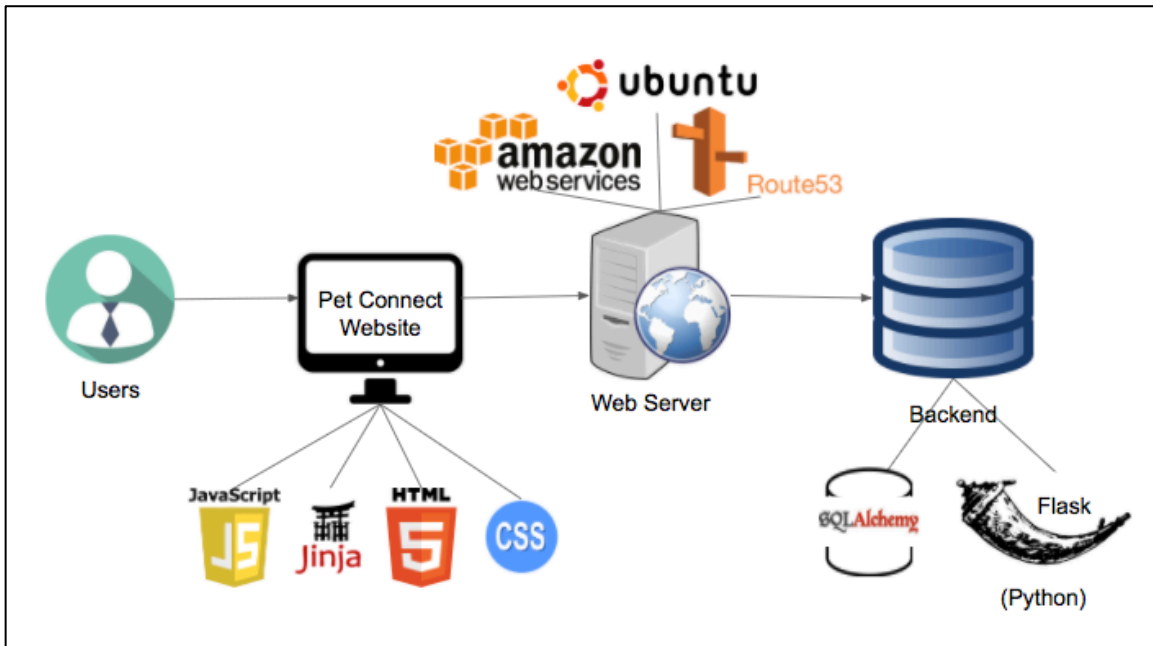


Figure 7: Technical Diagram

USER INTERFACE

LOGIN PAGE

When users enter the website's address, they are presented with the screen shown in Figure 8: Login Page. This is where users can login to their account and use Pet Connect.

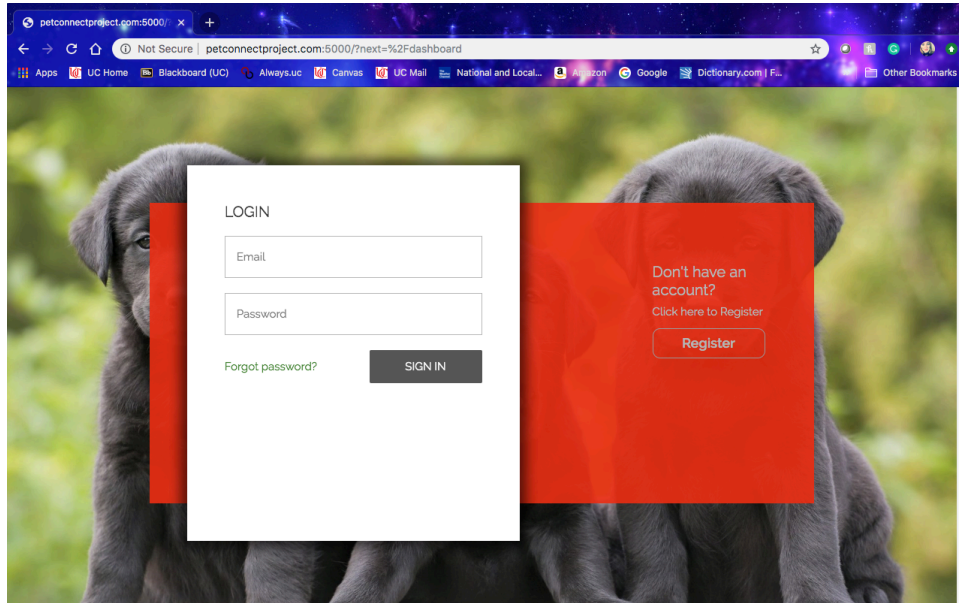


Figure 8: Login Page

REGISTRATION PAGES

The first image in this section (Figure 9: Registration Page) is what users see if they need to create an account. Everyone will be able to view this screen as this is a required step in gaining access to the website.

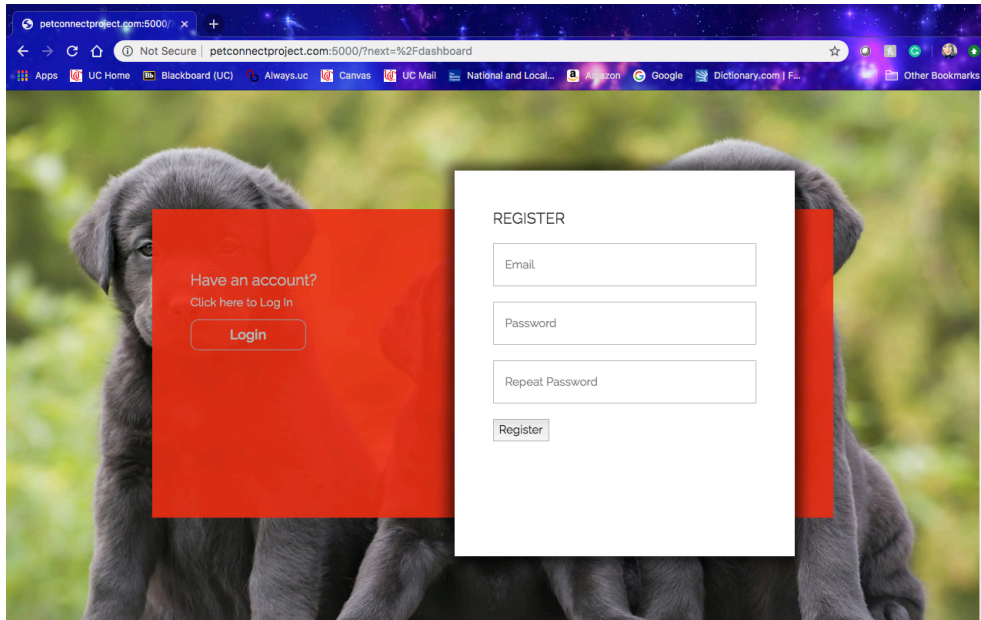


Figure 9: Registration Page

Once users have entered a valid email and a password they are directed to a page where they must enter more information. Figure 10: Registration Pt. 1 shows that users must enter their name, address, and a profile picture.

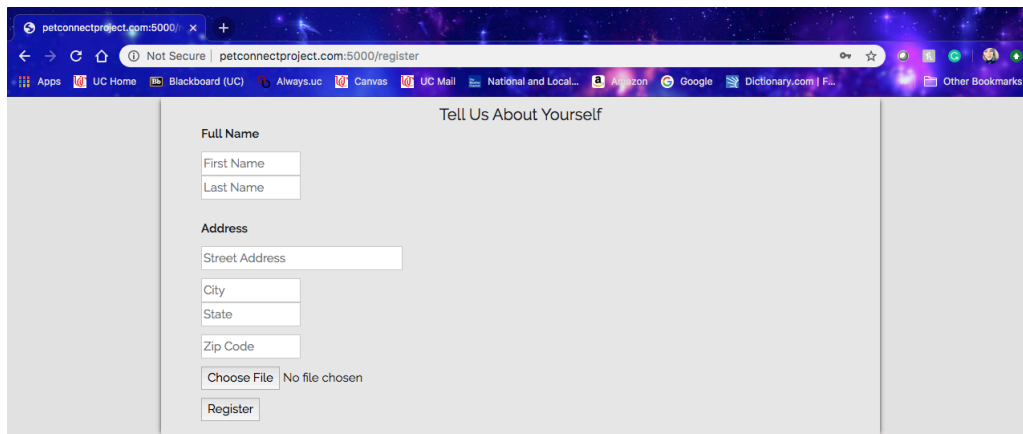


Figure 10: Registration Pt. 1

When the user is finished entering their information, they will click register and will then be presented with Figure 11: Registration Pt. 2. This screen is where they will choose to either join an existing family or they will choose to start a new family.

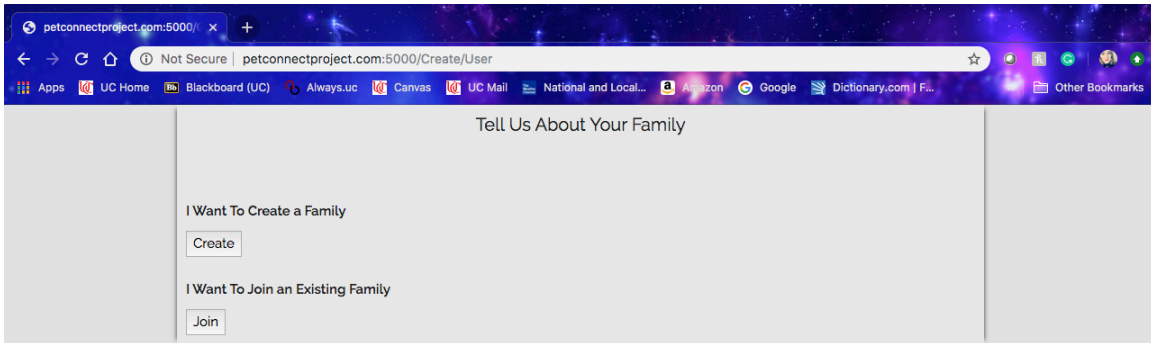


Figure 11: Registration Pt. 2

If the user decides to create a new family, they will be presented with the screen shown below in Figure 12: Create a New Family Page. This is where the user will enter information about their dog and include a picture.

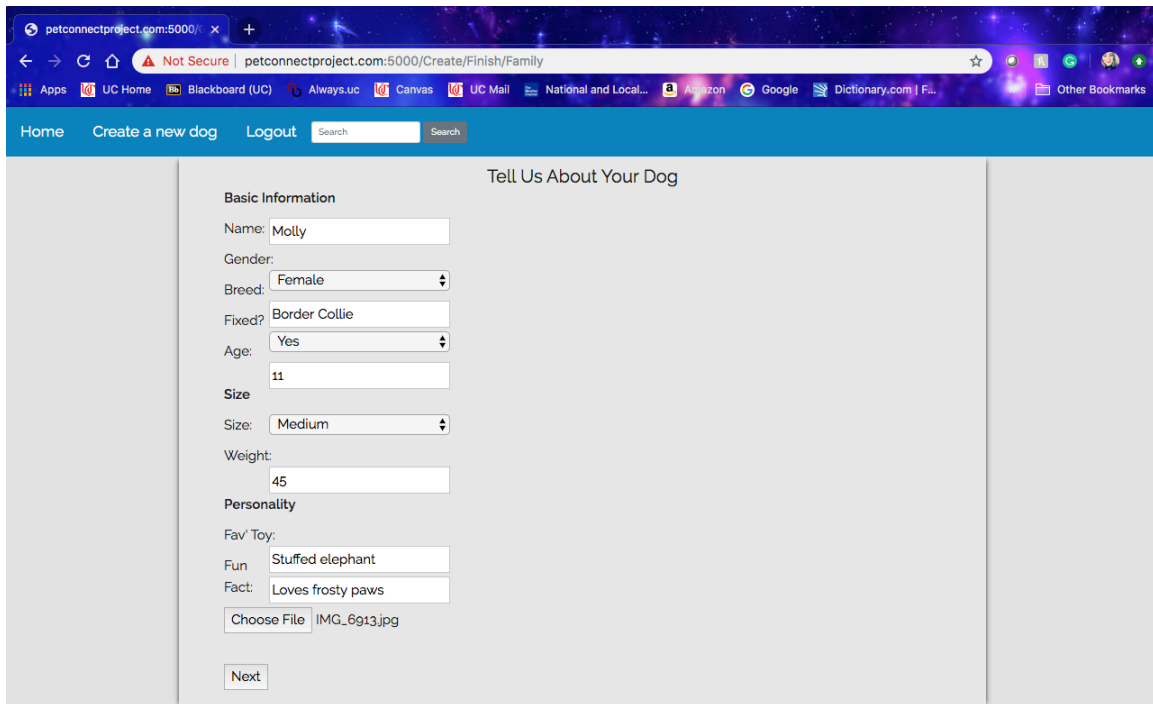


Figure 12: Create a New Family Page

During this process, the user will also be able to input their favorite park they like to visit with their dog(s). This screen can be seen below in Figure 13: Park Information.

Tell Us About Your Favorite Park

Name:

Figure 13: Park Information

If the user would like to join an existing family they will be presented with the screen shown in Figure 14: Join an Existing Family. Here they will be able to search for their family member’s existing “Head of Household” profile where they will be able to request to be added.

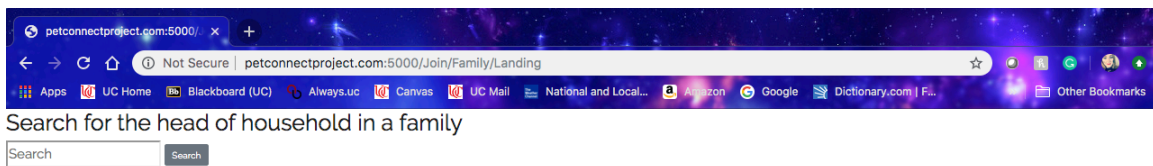


Figure 14: Join an Existing Family Pt. 1

Figure 15: Join an Existing Family Pt. 2 shows what users will see when they search for an already existing family name.

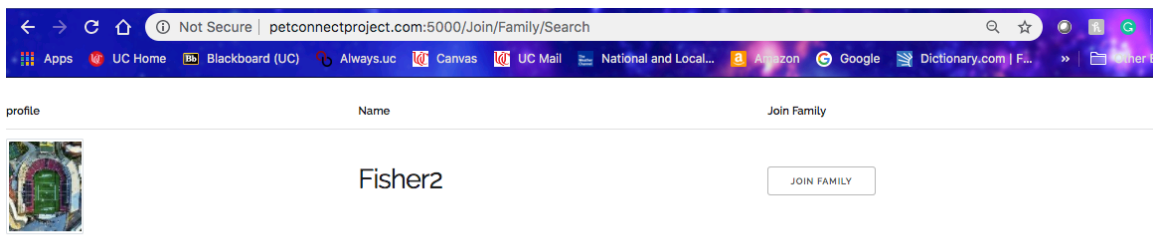


Figure 15: Join an Existing Family Pt. 2

HOME PAGE

Once a user has logged in or once they have completed the registration process they are presented with the screen shown below in Figure 16: Home Screen. This is the home screen for Pet Connect. Users will be able to post on their newsfeed, interact with their friends, and post pictures for others to see.

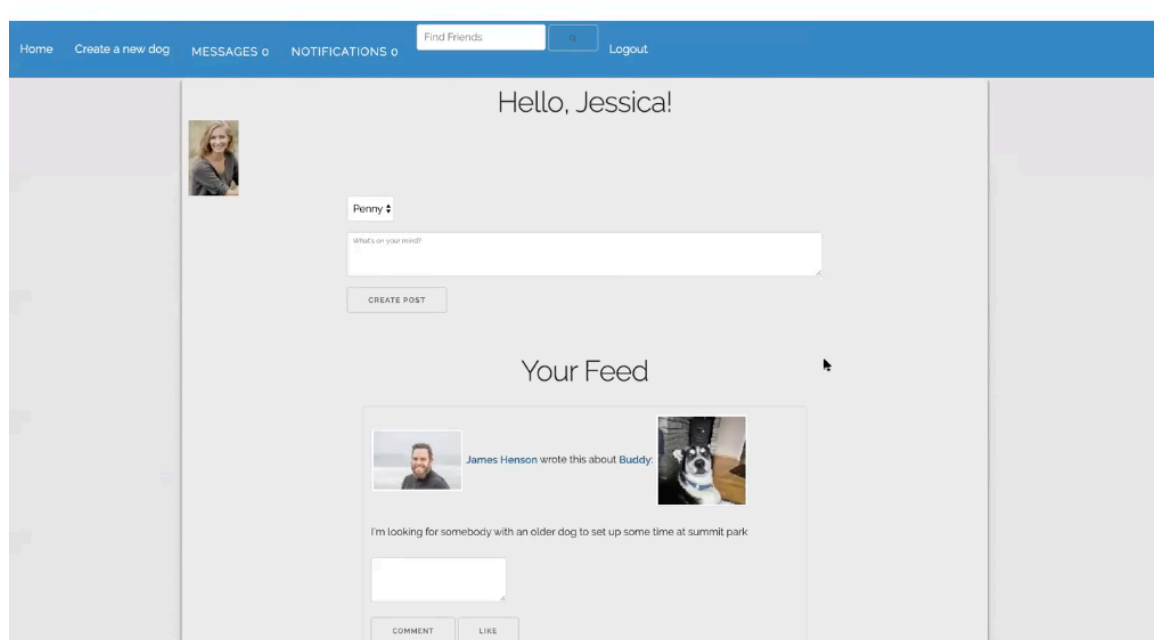


Figure 16: Home Screen

MESSAGES AND NOTIFICATIONS

Users can use the messenger service to send private messages to each other. This is where they can privately discuss more information about their dogs to decide if they would be a good match for a playdate. They can then use the message page to set up a playdate for their dogs. The message page can be seen below in Figure 17: Message Board Page.

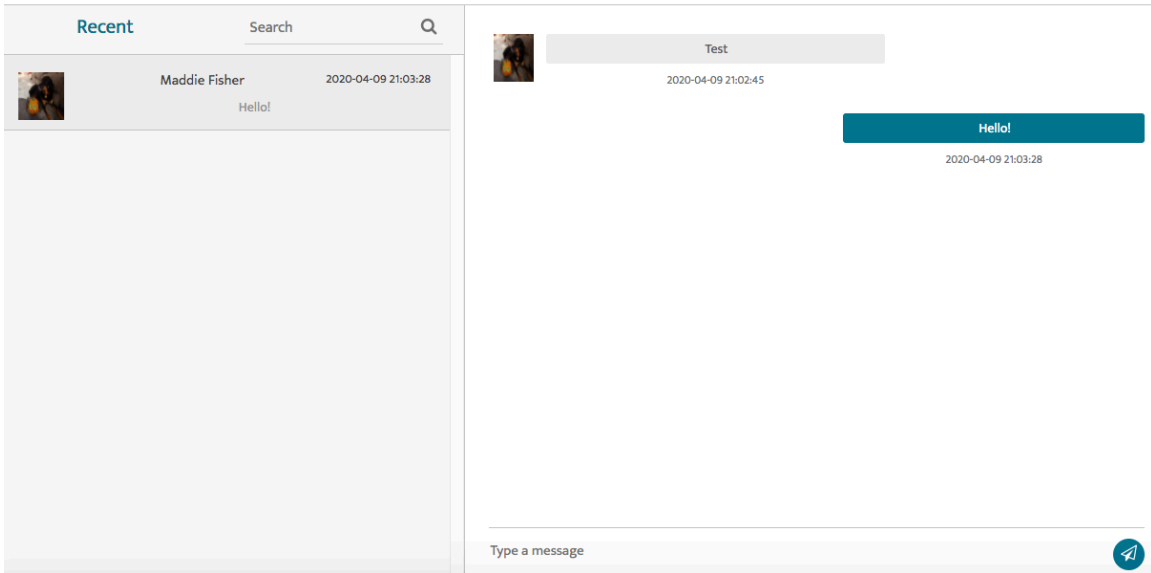


Figure 17: Message Board Page

Users will also be able to view their notifications in the notifications at the top of the screen (Figure 18: Notifications). They can view new messages and see when others like or comment on their public posts.

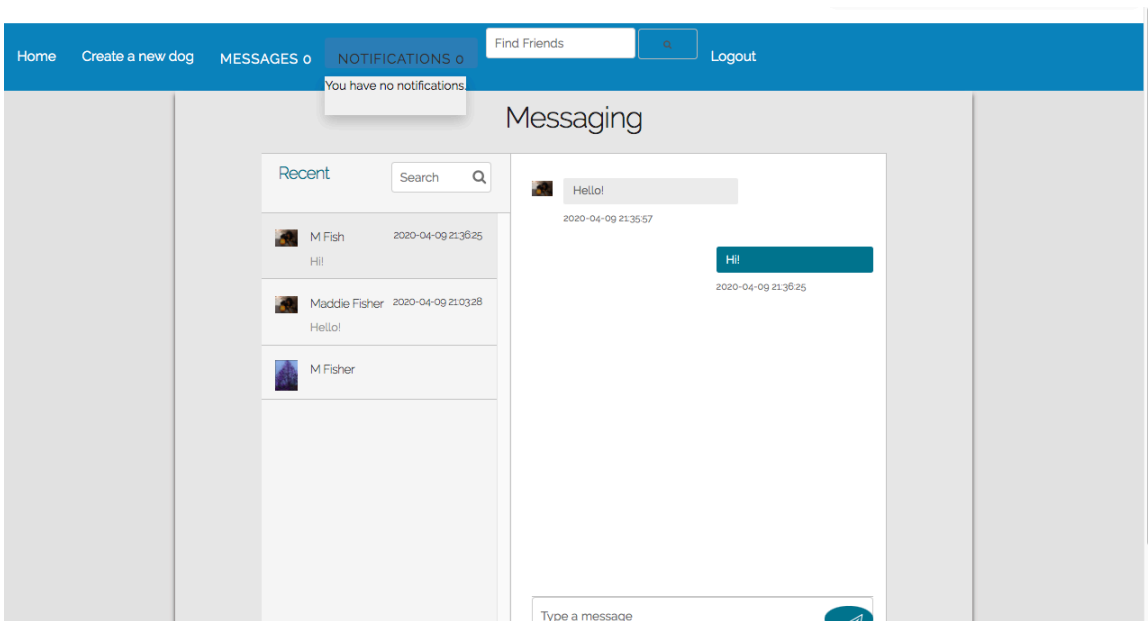


Figure 18: Notifications

FRIENDS LIST

Users can access their full list of friends by clicking the search button at the top of the screen or they can search for specific users by typing their name (or a dog's name) into the search bar. The list that pops up when the search button is clicked can be seen in Figures 19: Friends and Dog Friends List Pt. 1 and Figure 20: Friends and Dog Friends List Pt. 2 below.

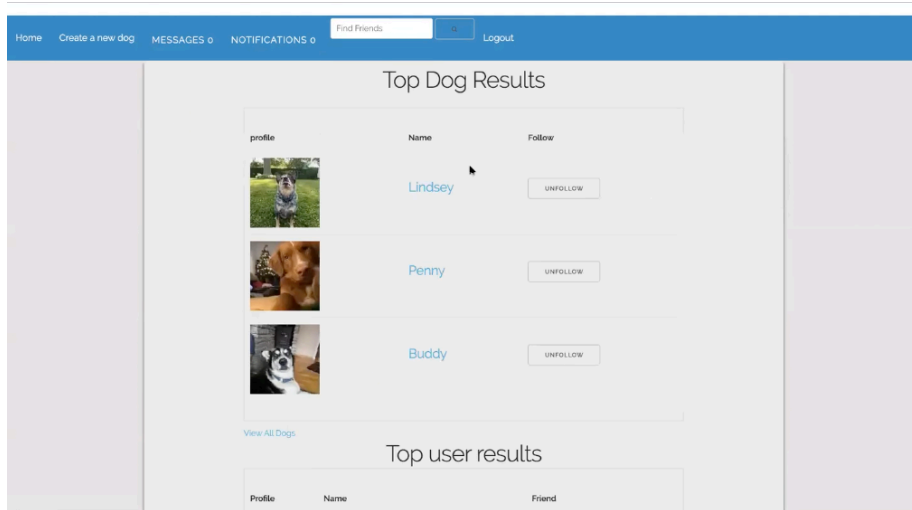


Figure 19: Friends and Dog Friends List Pt. 1

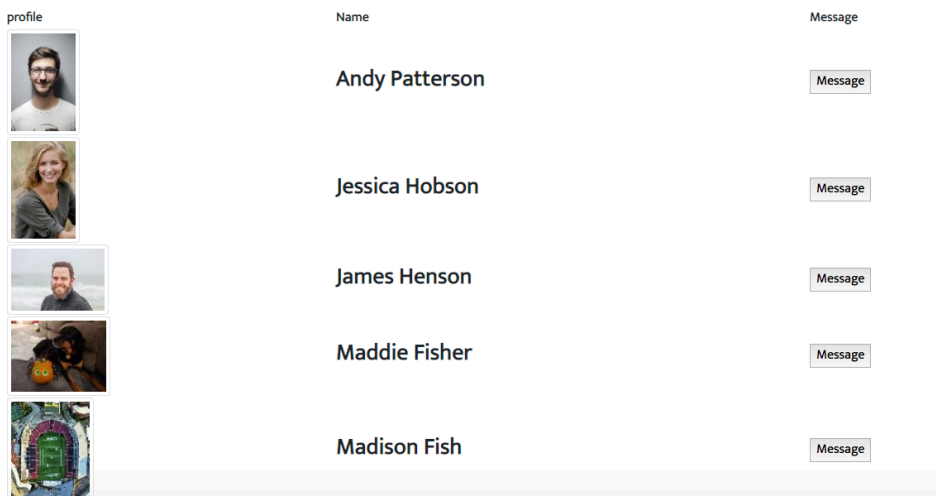


Figure 20: Friends and Dog Friends List Pt. 2

USER AND DOG PROFILE PAGES

If the user clicks on a person's name, they will see a page that looks like Figure 21: Dog Owner Profile Page. This image shows what a user's profile looks like. Here users will be able to schedule playdates, view their dog's profile, and see their personal feed of all posts relating to them.

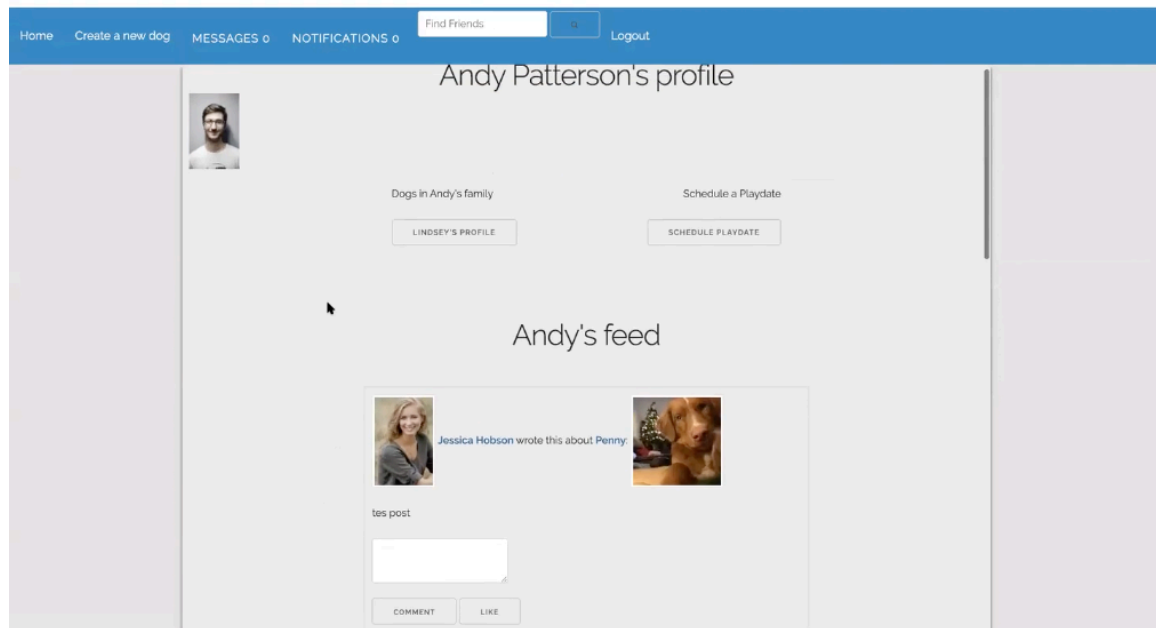


Figure 21: Dog Owner Profile Page

If a user clicks on a dog name, they are presented with a page that looks like Figure 22: Dog Profile Page. This page shows posts relating to the dog as well as their profile picture, breed, and age. If users want to see more information about the dog they can click the "More about" button below the profile picture and they will be presented with a page that looks like Figure 23: More About Page.

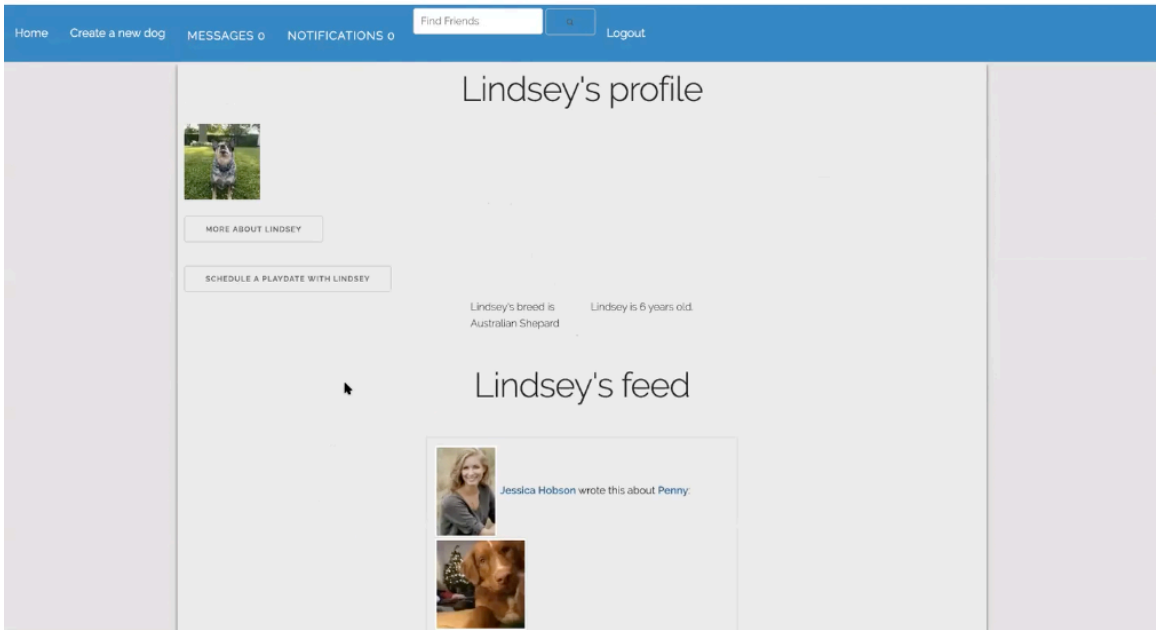


Figure 22: Dog Profile Page

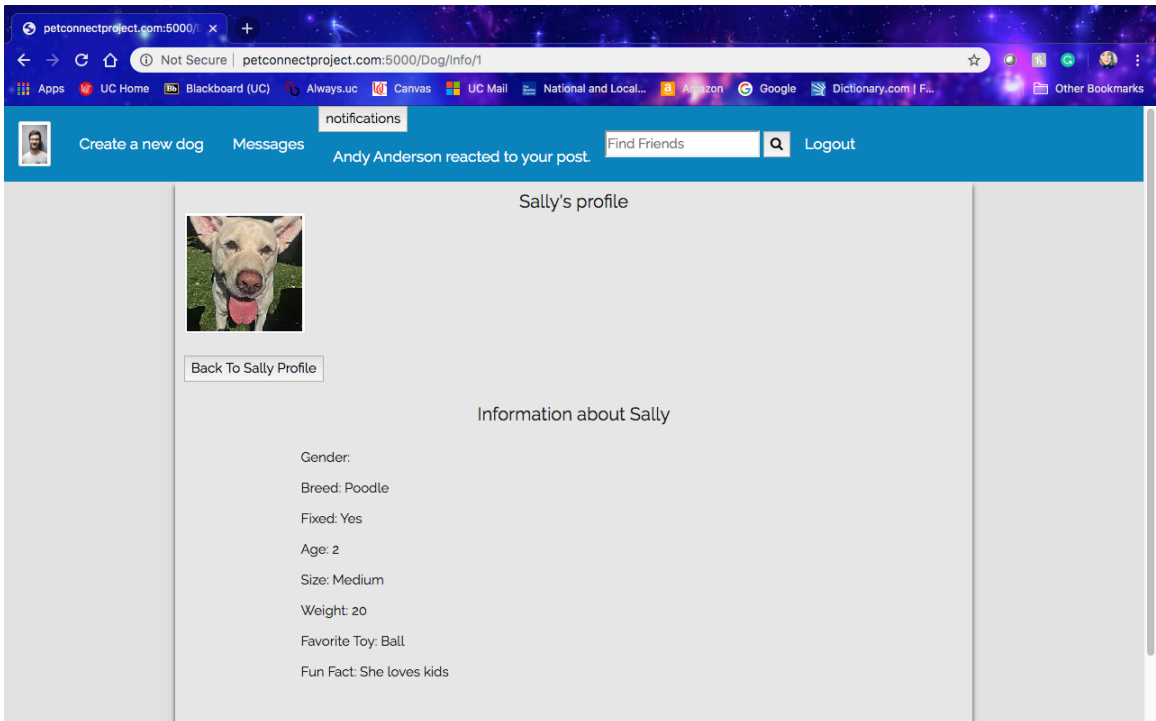


Figure 23: More About Page

SCHEDULE A PLAYDATE

If users find a dog they are interested in meeting with, they can go to their profile and schedule a playdate. Users can schedule a playdate by clicking the “SCHEDULE PLAYDATE” button on the dog’s profile or the owner’s profile. This button can be seen in Figure 24: Schedule a Playdate Pt. 1. Once the user clicks that button they will be taken to the calendar to set a meeting date and time. This calendar can be seen in Figure 25: Schedule a Playdate Pt. 2. Figure 25: Schedule a Playdate Pt. 2, also shows the view that users will see when they want to change their dog’s availability. Figure 26: Schedule a Playdate Pt. 3, shows the confirmation screen for when the user selects an available time slot for the playdate.

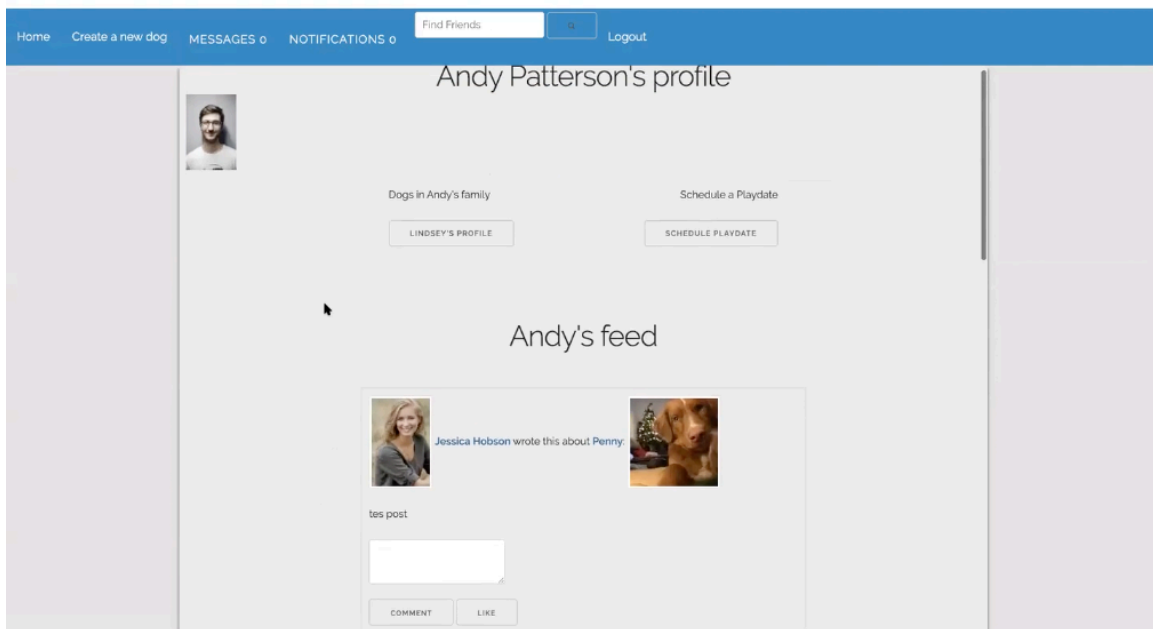


Figure 24: Schedule a Playdate Pt. 1

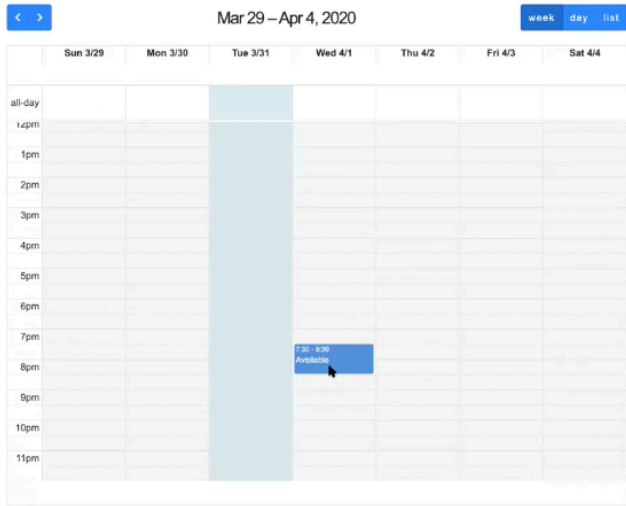


Figure 25: Schedule a Playdate Pt. 2

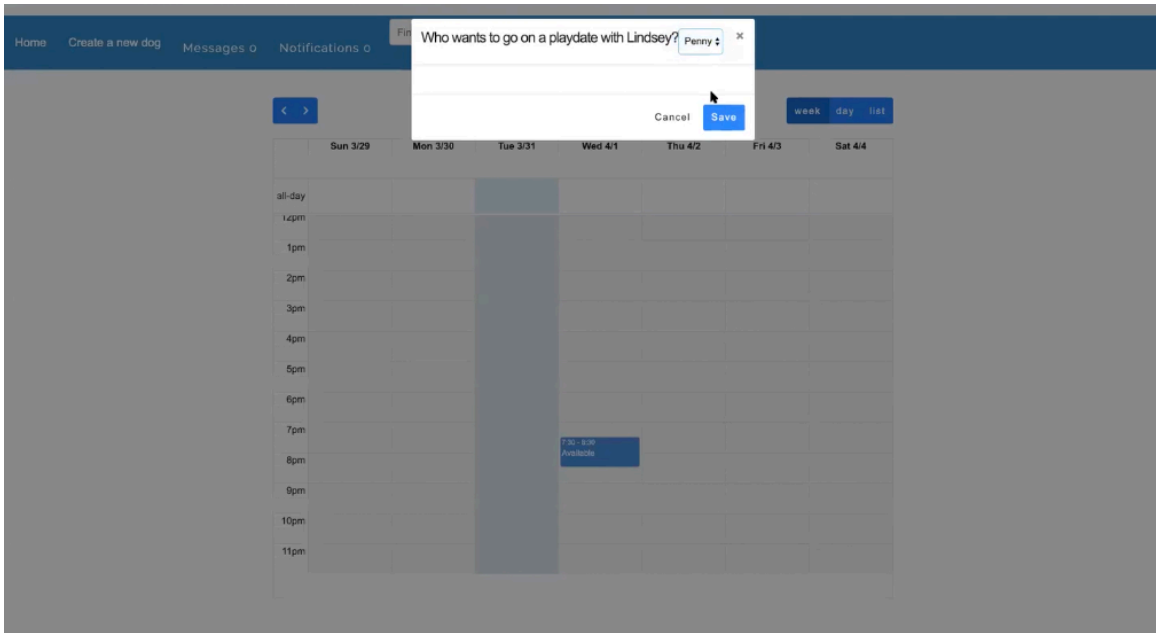


Figure 26: Schedule a Playdate Pt. 3

TESTING

OVERVIEW AND METHODOLOGY

The PetConnect team used a Quality Assurance (QA) testing approach. “Quality assurance (QA) is any systematic process of determining whether a product or service meets specified requirements “ (Rouse, Shiao, Alexander, & Gillis, 2019). Basically, the team made sure that the website can perform as promised. This section will outline the steps taken to ensure the highest quality functionality and performance of the PetConnect website.

The team chose to test for quality assurance because there would be no point to the website if it did not deliver as promised. If the users cannot create accounts, find a playdate for their dog, or communicate via the messenger, then the website serves no purpose and users will not be compelled to use it. The team wants to provide their customers with a functioning website that meets all of their needs so that the problem the community is facing can be corrected. To ensure this outcome, the team members of the group tested the website functions as they were completed. Potential users also tested the website so that the group could gain an outsider’s perspective. The methods laid out below show the importance of the user and how important it is that PetConnect is easy for them to navigate and fulfills all of their needs.

OBJECTIVE

The main objective of the testing presented in this section is to determine if all of the website’s functions are performing as promised. Every function of the web application was tested individually to ensure high quality testing and notes were

taken to ensure issues could be corrected. The objective should be met and all functions should be performing properly prior to the IT Expo on April 14, 2020.

SCOPE OF TESTING

The testing covers every function the website is meant to perform. Each end user performed testing and each feature was tested on a pass/fail condition. End users include the head of household, family member, and web developers/admins. Each user should have been able to perform the tasks necessary for them to achieve full functionality of the website for their user group.

Figure 27: Login Page Tests, shows an example of the features being tested.

The features in this scenario include: login email, login password, forgot password, sign-in button, click here to register (desktop), register button, and repeat password. As the features were tested, notes were taken in the appropriate cells to the right of the feature. The cells that were completed for each feature include: Intended Functionality, Actual Functionality, Desktop P/F (Pass/Fail), Mobile P/F (Pass/Fail), All P/F (Pass/Fail), Tester, and Comments.

	A	B	C	D	E	F	G	H
1	Item	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester	Comments
2	Login Email	Must be a valid email						
3	Login Password	Must be the correct password						
4	Forgot Password	Properly redirects						
5	Sign in button	Attempts to sign in						
6	Click here to register (desktop)	Shifts page to Register						
7	Register button	Attempts to register an account						
8	Repeat Password	Checks password is the same						

Figure 27: Login Page Tests

The other pages of the website were also tested along with their corresponding features. The other pages that were tested include: Tell us about yourself, Tell us about your family, Create a new family, Join an existing family search, Join an existing family, Create a new dog, Dog's favorite park, Dashboard, Nav bar, Messages, Search, All dogs search, All users search, Dog profile, User profile, Schedule availability, Schedule playdate, view comment, and view likes. Much like the test spreadsheet presented above in Figure 27: Login Page Tests, each website page listed prior also had its own spreadsheet with listed features. Each spreadsheet has a similar format with the same requested information regarding each feature. Another format can be seen below in Figure 28: Schedule Availability Test Page where there are Items and Sub Items listed.

A	B	C	D	E	F	G	H	I
Item	SubItem	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester	Comments
Calendar								
	Nav buttons	Switch between Months, Weeks, days, or lists..						
	Click date	Opens modal to schedule playdate						
	Views	Switches between Month, Week, Day or list views for events						
Schedule modal	Opens if a date is clicked							
	Times	Opens a clock to set up times of the day						
	Cancel	Cancels the event						
	Save	Saves the event						
Edit Model	Opens if an event is clicked							
	Times	Populate with the times set						
	Cancel	Cancels editing event						
	Update	Updates event with new times						How will we handle FK issues when a playdate has this time?
	Delete	Deletes the event						How will we handle FK issues when a playdate has this time?

Figure 28: Schedule Availability Test Page

LOGGING TESTS AND PROCEDURES

Each user group completed testing: Head of Household, Family Member, and Web Developer/Admin. Notes were taken to ensure successes and issues were documented. The documented website feature shortcomings allowed the team to determine the corrective actions necessary to fix the discovered issue(s). Web Developers/Admins tracked their testing with the spreadsheets. Team members administered user testing to potential users and observed the users as they navigated the website. These tests were also documented in a spreadsheet format. Team members avoided guiding users as they navigated the website so that a true experience was documented.

DEVELOPER TESTING

One of the developers, Larry, performed the final testing for the website Pet Connect. Final testing is specified because both developers, Matt and Larry, performed testing as they created and worked on the website over the course of both the Fall and Spring semesters. The final testing results are being focused on here as not all of the intermittent testing was documented. Larry personally went through each feature on the website and put them through a pass/fail test to ensure each feature was performing as expected. Examples of the testing Larry performed can be seen below in Figure 29: Login Testing, Figure 30: Tell Us About Yourself Testing, and Figure 31: Create a New Dog Testing (please note that the remainder of the feature testing can be seen in Appendix B: Additional

testing Scenarios starting on page 49). These testing samples show how Larry walked through every feature on every page of Pet Connect.

Item	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Login Email	Must be a valid email	Must be a valid email	P	P	P	Larry
Login Password	Must be the correct password	Must be the correct password	P	P	P	Larry
Forgot Password	Properly redirects	Properly redirects	P	P	P	Larry
Sign in button	Attempts to sign in	Attempts to sign in	P	P	P	Larry
Click here to register (desktop)	Shifts page to Register	Shifts page to Register	P	P	P	Larry
Register button	Attempts to register an account	Attempts to register an account	P	P	P	Larry
Repeat Password	Checks password is the same	Checks password is the same	P	P	P	Larry

Figure 29: Login Testing

Item	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
First Name	Accepts a first name	Accepts a first name	P	P	P	Larry
Last Name	Accepts a last name	Accepts a last name	P	P	P	Larry
Street Address	Accepts a street address	Accepts a street address	P	P	P	Larry
City	Accepts a city	Accepts a city	P	P	P	Larry
State	Accepts a state	Accepts a state	P	P	P	Larry
Choose File	Accepts an image of jpg or png or null	Accepts an image of jpg or png or null	P	P	P	Larry
Register button	If valid data, move on to next page	If valid data, move on to next page	P	P	P	Larry

Figure 30: Tell Us About Yourself Testing

Item	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Name	Accepts a name	Accepts a name	P	P	P	Larry
Gender	Drop down Male or Female	Drop down Male or Female	P	P	P	Larry
Breed	Accepts a breed	Accepts a breed	P	P	P	Larry
Fixed	Drop down Yes or No	Drop down Yes or No	P	P	P	Larry
Age	Accepts age as int	Accepts age as int	P	P	P	Larry
Size	Drop down Extra small - Very Large	Drop down Extra small - Very Large	P	P	P	Larry
Weight	Accept weight in int	Accept weight in int	P	P	P	Larry
Favorite Toy	Accepts name as string	Accepts name as string	P	P	P	Larry
Fun fact	Accepts a small summary	Accepts a small summary	P	P	P	Larry
Choose File	Accepts image as PNG or JPG or allows null	Accepts image as PNG or JPG or allows null	P	P	P	Larry
Next	Moves to next screen about dog	Moves to next screen about dog	P	P	P	Larry
Nav Bar	Does not show on new account with no dogs	Does not show on new account with no dogs	P	P	P	Larry

Figure 31: Create a New Dog Testing

USER TESTING

To protect the privacy of the user testing participants the team elected not to include their names in this report. To get a better understanding of how a user outside of the team may interact with the website, two friends were recruited to sit down with the project manager, Madison, to run through test scenarios and get their feedback. Tester number 1 acted as a Head of Household user and Tester number 2 acted as a family member in Tester number 1's family.

Below in Figure 32: Tester 1 Tasks and Figure 33: Tester 2 Tasks, the results from the sit-downs with the two test subjects can be seen. The two test subjects were each given multiple tasks to accomplish on the website and notes were taken as they walked through each task. The two test subjects were given little help so that the project manager could take note of authentic experiences. The project manager took notes of their comments as they accomplished each task. The test subjects were encouraged to give honest feedback and to comment on their experience out loud as they worked through a task.

Head of Household User			
Test	Was the user able to complete the task?	Comments – PM	Comments from test subject
Register for a profile	Yes	User was able to navigate to the register page and follow the steps to set up their profile; asked what the "choose file" button was for	– simple format – easy to follow – Label the profile pic upload
Create a family	Yes	User successfully chose the correct option to create a family	– Easy -- there are only two options so it was easy to understand what to do when I encountered this page
Create a Dog Profile	Yes	User was able to enter their test dog's information into the appropriate boxes	– It's kind of hard to tell what information is supposed to go in what boxes because they aren't lined up properly
Navigate to the page with list of top users and dogs	Yes	User asked where the list was after looking at the top of the screen	– Maybe there could be a button to navigate to the user page – I didn't realize the magnifying glass would take me to the user page
Friend a person	Yes	User clicked the friend button	– Reminds me of friending someone on Facebook, so I knew where to click
Post a message to the wall	Yes	User navigated back to the home screen, clicked the text box, and then "create a post"	– The text box is a little large
Navigate to your dog's profile	Yes	User clicked their dog's name that was listed on the homescreen when they made a comment	– I like that clicking on the names takes me to their profile, this also reminds me of Facebook
Set availability for someone to schedule a play date with dog	Yes	Took a little bit of time for the user to figure out they were supposed to click on one of the calendar squares to schedule time with their dog	– Could you include instructions at the top of the screen telling people to click on a square to schedule availability
Log out of your profile	Yes	User looked to the top of the screen and clicked the log out button	– easy enough

Figure 32: Tester 1 Tasks

Family Member Testing			
Test	Was the user able to complete the task?	Comments – PM	Comments from test subject
Register for a profile	Yes	User clicked register button and followed the steps	– Looks good – I like the colors
Join a Family	Yes	User successfully chose the correct option to join a family	– The buttons are labeled so it was easy to understand
Navigate to the page with list of top users and dogs	Yes	User clicked around the top navigation bar looking for the friends page, and I eventually told them to click the magnifying glass	– Why isn't the user list labeled
Friend a person	Yes	User clicked the "Friend" button next to multiple users	– Button was easy to find
Send a personal message to someone	Yes	User Clicked the message's tab at the top of the screen	– Wow this looks great!
Post a message to the wall	Yes	User clicked the home button and typed in the text box	– Am I posting for my dog or for myself? It's a little unclear – Oh nevermind it says it when I clicked post
Navigate to another dog's profile	Yes	User clicked another dog's name that was listed on the homescreen	– Oh nice, I like that I can access the profile this way (**referring to clicking the name on the home screen**)
Schedule a playdate with another dog	Yes	User clicked "Schedule a playdate"	– Pretty easy task – I like the consistency of the colors and that it's a calendar view
Log out of your profile	Yes	User clicked log out at the top of the screen	– Easy to do since it's just like any other social website

Figure 33: Tester 2 Tasks

WHAT WE LEARNED DURING TESTING

Walking through every feature on the website helped the team ensure everything was functioning properly before turning it over to users. The user testing gave the team insight to potential flaws in the current web site's design. The test users, while brief in their feedback, did give the team some direction as to what improvements could be made. The first test user talked about how much they liked the format of the website because it was simple in design. The first constructive feedback given by tester 1 was that it was difficult to figure out what information was supposed to go where on the dog profile creation page because the text was not lined up with the text boxes. The next piece of constructive feedback given was that it was difficult to find the list of top users and dogs, so there should be a labeled button or something to better point it out. The first test user made multiple comments about how some of the functions reminded them of Facebook, which they seemed to enjoy. Other comments made by the first tester can be seen above in Figure 32: Tester 1 Tasks.

Tester 2 also provided some helpful feedback for the team. Tester 2 also struggled to find the list of users and dogs and requested help when trying to find it. Madison gave the user some direction so they could go to the list, and the test user commented that the list should be labeled. Tester 2 also commented on the fact that they liked the colors used for the website because they did not hurt their eyes. The remainder of tester 2's comments can be seen in Figure 33: Tester 2 Tasks. All in all, the feedback from the two test subjects was positive and the team took note of their constructive criticisms.

FUTURE RECOMMENDATIONS/RECOMMENDATIONS FOR IMPROVEMENT

The developers put in a lot of hard work to produce the final version of Pet Connect, and while they are happy with the final product they produced, there are some changes they would incorporate if there was more time. For starters, the developers would have liked to sort out the issues they had with incorporating Google Maps on the website. The team agrees that if they were to continue working with Pet Connect, this is the first issue they would tackle because even though it is not crucial to the website, it would be really convenient for users to be able to search for a location while on the website. Another aspect that the team would like to work more on is the styling of the website. The team agrees that while the current version of the website looks great, a few things could be changed. Changes would include more labels, instructions, and improved styling in regards to the profile pictures and spacing.

The team definitely enjoyed working on this project over the past few months. As much as the team enjoyed their time working on Pet Connect, they do not have plans to continue with the project after the class. This is because the team members have full time positions lined up after graduation that they plan on shifting their focus to. The project gave them the opportunity to learn the process of building a website from the ground up as well as the opportunity to figure out where they fit best in that process. The team will take those lessons, as well as the many others they learned over the course of the previous months, with them into those careers.

CONCLUSIONS

FALL SEMESTER 2019

When the Fall Semester began, the team was ready to hit the ground running; however, after completing the first assignment they were faced with an issue they were not expecting – their original project idea was denied due to its simplicity. After overcoming that setback, they have encountered many successes and minimal additional setbacks. The team set out to create a web application from scratch that meets the needs of dog owners to provide their furry companion(s) with fulfilling and positive social interactions. Research was completed to gauge the current market and better understand the importance of dog socialization. The team used this information to develop a list of priorities for the application and the web developers began the grueling process of putting the website together from scratch.

The first complication met in this process was setting up the AWS server to host the website. It took some time, but Matt conducted research and was able to successfully have the website show up on the AWS server. The next issue encountered was getting the registration page working for the website. The web developers (Larry and Matt), have prior experience with the languages being used to create the website, so fortunately they knew where to go for help when fixing the code for the pages relating to registration. Another issue faced had more to do with the styling of the website. When coding for the navigation bar, Matt had issues getting the navigation bar to appear at the top of the screen for all of the pages like he wanted. He and Larry worked together to fix the

placement of the navigation bar by looking up various solutions on the Internet.

Matt and Larry also encountered issues with trying to get Flask to work, but they persevered each time and found solutions for the problems encountered.

Originally, the developers planned on using MySQL for the website's backend database; however, after working with it during the beginning stages of setting up the website Larry decided to switch over to SQLAlchemy. The process of switching over was time-consuming; however, it was ultimately deemed to be worth it since SQLAlchemy had nicer integrated tools as compared to MySQL. While working with SQLAlchemy, Larry encountered some issues with the Object Relational Mapper (ORM) tool. He found that this tool could not handle a full text index with multiple columns, so to fix this issue he had to create a tool that could handle this so that they can search for users based on their Email, First name, and Last name.

Even though issues were encountered while developing the frontend and backend of Pet Connect the developers have persevered. They have faced each problem and have come out on the other side successful each time. For the project management side of the project, not many issues have been encountered. Each assignment was completed in its entirety and turned in on time. The feedback for each assignment was resoundingly positive and the team was excited to receive such high marks for their work. The biggest setback was the 3-minute elevator pitch. This assignment was their lowest graded assignment and received most criticism for the lack of discussion relating to the problem the team was trying to solve with the web application. The team absorbed this

feedback and they were ready to apply the corrections for the upcoming final presentation.

All in all, the Fall Semester proved to be incredibly successful for the team. Each team member completed their assigned tasks to the best of their abilities and they worked extremely well together. The team kept in constant communication as various tasks were completed and there were no personal issues between the three as they were all respectful, considerate, and open with their communication surrounding the project. They are looking forward to having a completed project by the end of the next semester (Spring 2020)! During the next semester any remaining pages will be completed, testing will commence, and the spring semester assignments will be completed.

SPRING SEMESTER 2020

After the positive feedback from the Fall semester, the team felt prepared for the Spring semester. They were ready to complete the remaining necessary steps for their project to meet both the project management and the technical requirements. The plan for the Spring semester was to complete testing, the remaining web pages, the poster, the final paper, and the final presentation. With the successful completion of those steps, the team would be prepared for the big event – the IT Tech Expo. On their road to the IT Expo they encountered a few issues and one major unforeseen event.

Some of the smaller issues encountered during the semester were related to coding. Early on in the semester, the web developers (Matt and Larry)

encountered some issues with getting the remaining features completed. However, Matt and Larry worked hard to complete the notifications and messaging for Pet Connect. They did research online and played with the code to get it working properly. Another coding issue encountered was the mobile styling. Matt did research on mobile styling and figured out how to get the website to properly display on a mobile device. The web developers also encountered issues with incorporating Google Maps into the final version of the website. They performed research to try and solve the issues they encountered, but unfortunately they were not able to solve the issues they encountered in time for the final submission and the idea had to be abandoned. Even though the users cannot use Google Maps in the website, they can still discuss safe and equidistant meeting places in the message section of the website.

The largest unforeseen event encountered during this semester was something no one could have predicted – campus closing during spring break for the remainder of the semester due to the rapid spread of COVID-19. Due to the campus closure and subsequent quarantine, the team was no longer able to meet in-person nor were they able to complete their final presentation or the IT Expo in-person. The CECH team got together and figured out a way for the entire class to complete all of the necessary requirements online via video-chat applications and online interactions. It was determined that the Pet Connect team (as well as the others) would complete their presentation on a new date online with their advisors and that presentation would be recorded and used for the now virtual IT Expo. The CECH team did a great job of figuring out everything for the

entire class in such a short period of time so that everyone could meet their requirements for graduation.

Completing this project over the course of the Fall and Spring semesters provided the team with a wealth of knowledge that they will take with them going forward into their future careers. Madison, Larry, and Matt learned a lot about themselves and what it takes to be successful in the business world. The biggest lesson they learned was the importance of utilizing the strengths of every person on the team and the success that can be achieved when this is done properly. For instance, Matt and Larry were more technically inclined so they took over the responsibilities of creating the website. Madison on the other hand showed strength in project management, so she was put in charge of the reports, poster, and communication. Dividing the work this way proved to be very successful and this is because throughout both semesters the team received high praise and marks for their assignments. The team's open line of communication also contributed to their success. This form of communication helped them to address issues quickly and stay on top of all of the project requirements. Through this process the team was also able to work on their presentation skills. Prior to this class, Madison was very nervous in front of a crowd and even though that fear is still there, it has decreased significantly. Even though it seems simple, this project taught her just how relaxed she can be in front of a crowd if she practices multiple times beforehand. Through Pet Connect the team learned some important lessons on what it takes to be a successful, and they can't wait to take all of these lessons with them into their future careers.

APPENDIX A. REFERENCES

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APPENDIX B. ADDITIONAL TESTING SCENARIOS

To avoid cluttering the main text, the remaining testing results have been listed here. These pages and their features were put through the same pass/fail testing as the three pages mentioned in the main testing section of this paper.

Item	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Create	Redirects to creating a new family	Redirects to creating a new family	P	P	P	Larry
Join	Redirects to joining an existing family	Redirects to joining an existing family	P	P	P	Larry

Figure 34: Tell Us About Your Family Testing

Item	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Last Name	Accepts a last name	Accepts a last name	P	P	P	Larry
Create Family Button	Creates our new family	Creates our new family	P	P	P	Larry

Figure 35: Create a New Family Testing

Item	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Search for a family	Accepts a string to search for a family	Accepts a string to search for a family	P	P	P	Larry
Search button	Redirects to family results	Redirects to family results	P	P	P	Larry

Figure 36: Join an Existing Family Search Testing

Item	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Profile	Image can be clicked to show full image	Image can be clicked to show full image	P	P	P	Larry
Name	Name of the family	Name of the family	P	P	P	Larry
Join Family	Button to redirect and join a family	Button to redirect and join a family	P	P	P	Larry

Figure 37: Join an Existing Family Testing

Item	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Name	Accepts name of the park	Accepts name of the park	P	P	P	Larry
Address	Accepts address of the park	Accepts address of the park	P	P	P	Larry
City	Accepts city name	Accepts city name	P	P	P	Larry
State	Accepts state name	Accepts state name	P	P	P	Larry
Register	Creates dog, and redirects to dashboard	Creates dog, and redirects to dashboard	P	P	P	Larry
Nav Bar	Does not show on new account with no dogs	Does not show on new account with no dogs	P	P	P	Larry

Figure 38: Dog's Favorite Park Testing

Item	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Home	Returns the user to their dashboard	Returns the user to their dashboard	P	P	P	Larry
Create a new dog	Redirects the user to create a new dog, only if you are the head of household	Redirects the user to create a new dog, only if you are the head of household	P	P	P	Larry
Messages	Shows most recent messages in drop down	Shows most recent messages in drop down	P	P	P	Larry
Notifications	Shows most recent notifications in drop down	Shows most recent notifications in drop down	P	P	P	Larry
Messages	Shows a number > 0 if there is a new unseen message	Shows a number > 0 if there is a new unseen message	P	P	P	Larry
Notifications	Shows a number > 0 if there is a new unseen notification	Shows a number > 0 if there is a new unseen notification	P	P	P	Larry
Find Friends	Accepts a name to search	Accepts a name to search	P	P	P	Larry
Search button	Redirects to search results	Redirects to search results	P	P	P	Larry
Logout	Logs the user out of PetConnect	Logs the user out of PetConnect	P	P	P	Larry
Messages	Provides a link in the dropdown to go to your messages and sets that messaging thread as active	Provides a link in the dropdown to go to your messages and sets that messaging thread as active	P	P	P	Larry
Notifications	Shows "You have no notifications" if none exist	Shows "You have no notifications" if none exist	P	P	P	Larry
Notifications	Jumps to Notification page when a notification is clicked.	Jumps to Notification page when a notification is clicked.	P	P	P	Larry

Figure 39: Navigation Bar Testing

Item	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Profile Picture	Is visible in the top left	Is visible in the top left	P	P	P	Larry
Dog drop down	Has a dropdown of all of your dogs	Has a dropdown of all of your dogs	P	P	P	Larry
Status box	Accepts a status about your dog	Accepts a status about your dog	P	P	P	Larry
Create post	Submits your post	Submits your post	P	P	P	Larry
Feed	Posters profile picture and name are shown	Posters profile picture and name are shown	P	P	P	Larry
Feed	Dogs picture and name are shown	Dogs picture and name are shown	P	P	P	Larry
Feed	Posts post is shown	Posts post is shown	P	P	P	Larry
Feed	Comment box accepts a comment	Comment box accepts a comment	P	P	P	Larry
Feed	Comment button submits comment	Comment button submits comment	P	P	P	Larry
Feed	Like button likes post	Like button likes post	P	P	P	Larry
Feed	Only 3 comments show at a time	Only 3 comments show at a time	P	P	P	Larry
Feed	After 3 comments "Show all comments" appears	After 3 comments "Show all comments" appears	P	P	P	Larry
Feed	Likes show the profile picture and name of who liked the post	Likes show the profile picture and name of who liked the post	P	P	P	Larry
Feed	If more than 1 likes the post it adds "And x more liked this"	If more than 1 likes the post it adds "And x more liked this"	P	P	P	Larry
Feed	A comment shows the profile picture and name of who commented	A comment shows the profile picture and name of who commented	P	P	P	Larry
Feed	A comment shows the comment	A comment shows the comment	P	P	P	Larry
Feed	A thumbnail can be clicked on to view the image	A thumbnail can be clicked on to view the image	P	P	P	Larry
Feed	A name can be clicked on to go to the profile	A name can be clicked on to go to the profile	P	P	P	Larry

Figure 40: Dashboard Testing

Item	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Thread Image	Shows friends image	Shows friends image	P	P	P	Larry
Thread Name	Shows friends name	Shows friends name	P	P	P	Larry
Thread Message	Shows most recent message between you and your friend	Shows most recent message between you and your friend	P	P	P	Larry
Thread date	Shows when the most recent message was sent	Shows when the most recent message was sent	P	P	P	Larry
Thread active	Shows which thread is currently being looked at	Shows which thread is currently being looked at	P	P	P	Larry
Messaging order	Newest at the bottom	Newest at the bottom	P	P	P	Larry
Message sent by you	On the left	On the left	P	P	P	Larry
Message sent by friend	on the right	on the right	P	P	P	Larry
Message time	Shows when message was sent	Shows when message was sent	P	P	P	Larry
Type a message	Accepts a message	Accepts a message	P	P	P	Larry
Send button	Sends message and updates thread	Sends message and updates thread	P	P	P	Larry

Figure 41: Messages Testing

Item	SubItem	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Top Dog Results		Shows top 5 of the top dog results by most related at the top	Shows top 5 of the top dog results by most related at the top	P	P	P	Larry
	Profile	Click image to view full sized picture	Click image to view full sized picture	P	P	P	Larry
	Name	Name of the Dog, with link to jump to their profile	Name of the Dog, with link to jump to their profile	P	P	P	Larry
	Follow	Button that will follow the dog, and set text to unfollow	Button that will follow the dog, and set text to unfollow	P	P	P	Larry
	View All Dogs	A link that will redirect to view all dogs, instead of top 5	A link that will redirect to view all dogs, instead of top 5	P	P	P	Larry
Top user results		Shows top 5 of the top user results by most related at the top	Shows top 5 of the top user results by most related at the top	P	P	P	Larry
	Text	Top User Results	Top User Results	P	P	P	Larry
	Profile	Click image to view full sized picture	Click image to view full sized picture	P	P	P	Larry
	Name	Name of the User, with link to jump to their profile	Name of the User, with link to jump to their profile	P	P	P	Larry
	Follow	Button that will friend the user, and set text to unfriend	Button that will friend the user, and set text to unfriend	P	P	P	Larry
	View All Users	A link that will redirect to view all users, instead of top 5	A link that will redirect to view all users, instead of top 5	P	P	P	Larry
profile text		Profile	profile	P	P	P	Larry

Figure 42: Search Testing

Item	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Profile	Click image to view full sized picture	Click image to view full sized picture	P	P	P	Larry
Name	Name of the User, with link to jump to their profile	Name of the Dog, with link to jump to their profile	P	P	P	Larry
Follow	Button that will follow the dog, and set text to unfollow	Button that will follow the dog, and set text to unfollow	P	P	P	Larry

Figure 43: All Dogs Search Testing

Item	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Profile	Click image to view full sized picture	Click image to view full sized picture	P	P	P	Larry
Name	Name of the User, with link to jump to their profile	Name of the User, with link to jump to their profile	P	P	P	Larry
Follow	Button that will follow the User, and set text to unfollow	Button that will follow the User, and set text to unfollow	P	P	P	Larry

Figure 44: All Users Search Testing

Item	SubItem	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Profile				P	P	P	Larry
	Image	Click image to view full sized picture of the dog	Click image to view full sized picture of the dog	P	P	P	Larry
	Name	"x's profile"	"x's profile"	P	P	P	Larry
	More about x	Button to redirect to more info about the dog	Button to redirect to more info about the dog	P	P	P	Larry
	Change availability or make a playdate	When part of their family, the button will redirect to schedule availability. If not, it will make a playdate	When part of their family, the button will redirect to schedule availability. If not, it will make a playdate	P	P	P	Larry
	Information	Shows the dogs breed and age	Shows the dogs breed and age	P	P	P	Larry
Feed				P	P	P	Larry
	Posters profile picture	Can be clicked to view full sized	Can be clicked to view full sized	P	P	P	Larry
	Posters name	Can be clicked on to view their profile	Can be clicked on to view their profile	P	P	P	Larry
	Dogs profile picture	Can be clicked to view full sized	Can be clicked to view full sized	P	P	P	Larry
	Dogs name	Can be clicked on to view their profile	Can be clicked on to view their profile	P	P	P	Larry
	Post	Is shown	Is shown	P	P	P	Larry
	Comment box	accepts a comment	accepts a comment	P	P	P	Larry
	Comment button	submits comment	submits comment	P	P	P	Larry
	Like button	likes post	likes post	P	P	P	Larry
	Only 3 comments show at a time	shows 3 comments	shows 3 comments	P	P	P	Larry
	After 3 comments "Show all comments" appears	Show all option appears	Show all option appears	P	P	P	Larry
	Likes show the profile picture and name of who liked the post	Shows likes	Shows likes	P	P	P	Larry
	If more than 1 likes the post it adds "And x more liked this"	Shows multiple likes	Shows multiple likes	P	P	P	Larry
	A comment shows the profile picture and name of who commented	Shows who commented	Shows who commented	P	P	P	Larry
	A comment shows the comment	Shows comment	Shows comment	P	P	P	Larry

Figure 45: Dog Profile Testing

Item	SubItem	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Profile				P	P	P	Larry
	Image	Click image to view full sized picture of the User	Click image to view full sized picture of the User	P	P	P	Larry
	Name	"x's profile"	"x's profile"	P	P	P	Larry
	Dogs in family	Shows all the dogs in a list in their family	Shows all the dogs in a list in their family	P	P	P	Larry
	x's profile	Button to jump to the dog's profile	Button to jump to the dog's profile	P	P	P	Larry
Feed				P	P	P	Larry
	Posters profile picture	Can be clicked to view full sized	Can be clicked to view full sized	P	P	P	Larry
	Posters name	Can be clicked on to view their profile	Can be clicked on to view their profile	P	P	P	Larry
	Dogs profile picture	Can be clicked to view full sized	Can be clicked to view full sized	P	P	P	Larry
	Dogs name	Can be clicked on to view their profile	Can be clicked on to view their profile	P	P	P	Larry
	Post	Is shown	Is shown	P	P	P	Larry
	Comment box	accepts a comment	accepts a comment	P	P	P	Larry
	Comment button	submits comment	submits comment	P	P	P	Larry
	Like button	likes post	likes post	P	P	P	Larry
	Only 3 comments show at a time	shows 3 comments	shows 3 comments	P	P	P	Larry
	After 3 comments "Show all comments" appears	Show all option appears	Show all option appears	P	P	P	Larry
	Likes show the profile picture and name of who liked the post	Shows likes	Shows likes	P	P	P	Larry
	If more than 1 likes the post it adds "And x more liked this"	Shows multiple likes	Shows multiple likes	P	P	P	Larry
	A comment shows the profile picture and name of who commented	Shows who commented	Shows who commented	P	P	P	Larry
	A comment shows the comment	Shows comment	Shows comment	P	P	P	Larry

Figure 46: User Profile Testing

Item	SubItem	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Calendar				P	P	P	Larry
	Nav buttons	Switch between Months, Weeks, days, or lists..	Switch between Months, Weeks, days, or lists..	P	P	P	Larry
	Click date	Opens modal to schedule playdate	Opens modal to schedule playdate	P	P	P	Larry
	Views	Switches between Month, Week, Day or list views for events	Switches between Month, Week, Day or list views for events	P	P	P	Larry
Schedule modal	Opens if a date is clicked			P	P	P	Larry
	Times	Opens a clock to set up times of the day	Opens a clock to set up times of the day	P	P	P	Larry
	Cancel	Cancels the event	Cancels the event	P	P	P	Larry
	Save	Saves the event	Saves the event	P	P	P	Larry
Edit Model	Opens if an event is clicked			P	P	P	Larry
	Times	Populate with the times set	Populate with the times set	P	P	P	Larry
	Cancel	Cancels editing event	Cancels editing event	P	P	P	Larry
	Update	Updates event with new times	Updates event with new times	P	P	P	Larry
	Delete	Deletes the event	Deletes the event	P	P	P	Larry

Figure 47: Schedule Availability Testing

Item	SubItem	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Calendar				P	P	P	Larry
	Nav buttons	Switch between Weeks, days, or lists.	Switch between Weeks, days, or lists.	P	P	P	Larry
	Click date	Opens modal to schedule playdate	Opens modal to schedule playdate	P	P	P	Larry
	Views	Switches between Week, Day or list views for playdate	Switches between Week, Day or list views for playdate	P	P	P	Larry
Schedule modal	Opens if availability is clicked			P	P	P	Larry
	Times	Opens a clock to set up times of the day	Opens a clock to set up times of the day	P	P	P	Larry
	Cancel	Cancels the event	Cancels the event	P	P	P	Larry
	Save	Saves the event	Saves the event	P	P	P	Larry
Edit Model	Opens if an event is clicked			P	P	P	Larry
	Times	Populate with the times set	Populate with the times set	P	P	P	Larry
	Cancel	Cancels editing event	Cancels editing event	P	P	P	Larry
	Update	Updates event with new times	Updates event with new times	P	P	P	Larry
	Delete	Deletes the event	Deletes the event	P	P	P	Larry

Figure 48: Schedule Playdate Testing

Item	SubItem	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Profile				P	P	P	Larry
	Image	Click image to view full sized picture of the User	Click image to view full sized picture of the User	P	P	P	Larry
	Name	"x's profile"	"x's profile"	P	P	P	Larry
	Dogs in family	Shows all the dogs in a list in their family	Shows all the dogs in a list in their family	P	P	P	Larry
	x's profile	Button to jump to the dog's profile	Button to jump to the dog's profile	P	P	P	Larry
Feed				P	P	P	Larry
	Posters profile picture	Can be clicked to view full sized	Can be clicked to view full sized	P	P	P	Larry
	Posters name	Can be clicked on to view their profile	Can be clicked on to view their profile	P	P	P	Larry
	Dogs profile picture	Can be clicked to view full sized	Can be clicked to view full sized	P	P	P	Larry
	Dogs name	Can be clicked on to view their profile	Can be clicked on to view their profile	P	P	P	Larry
	Post	Is shown	Is shown	P	P	P	Larry
	Comment box	accepts a comment	accepts a comment	P	P	P	Larry
	Comment button	submits comment	submits comment	P	P	P	Larry
	Like button	likes post	likes post	P	P	P	Larry
	Only 3 comments show at a time	shows 3 comments	shows 3 comments	P	P	P	Larry
	After 3 comments "Show all comments" appears	Show all option appears	Show all option appears	P	P	P	Larry
	Likes show the profile picture and name of who liked the post	Shows likes	Shows likes	P	P	P	Larry
	If more than 1 likes the post it adds "And x more liked this"	Shows multiple likes	Shows multiple likes	P	P	P	Larry
	A comment shows the profile picture and name of who commented	Shows who commented	Shows who commented	P	P	P	Larry
	A comment shows the comment	Shows comment	Shows comment	P	P	P	Larry

Figure 49: View Comments Testing

Item	SubItem	Intended Functionality	Actual Functionality	Desktop P/F	Mobile P/F	All P/F	Tester
Profile				P	P	P	Larry
	Image	Click image to view full sized picture of the User	Click image to view full sized picture of the User	P	P	P	Larry
	Name	"X's profile"	"X's profile"	P	P	P	Larry
	Dogs in family	Shows all the dogs in a list in their family	Shows all the dogs in a list in their family	P	P	P	Larry
	x's profile	Button to jump to the dog's profile	Button to jump to the dog's profile	P	P	P	Larry
Feed				P	P	P	Larry
	Posters profile picture	Can be clicked to view full sized	Can be clicked to view full sized	P	P	P	Larry
	Posters name	Can be clicked on to view their profile	Can be clicked on to view their profile	P	P	P	Larry
	Dogs profile picture	Can be clicked to view full sized	Can be clicked to view full sized	P	P	P	Larry
	Dogs name	Can be clicked on to view their profile	Can be clicked on to view their profile	P	P	P	Larry
	Post	Is shown	Is shown	P	P	P	Larry
	Comment box	accepts a comment	accepts a comment	P	P	P	Larry
	Comment button	submits comment	submits comment	P	P	P	Larry
	Like button	likes post	likes post	P	P	P	Larry
	Only 3 comments show at a time	shows 3 comments	shows 3 comments	P	P	P	Larry
	After 3 comments "Show all comments" appears	Show all option appears	Show all option appears	P	P	P	Larry
	Likes show the profile picture and name of who liked the post	Shows likes	Shows likes	P	P	P	Larry
	If more than 1 likes the post it adds "And x more liked this"	Shows mulitple likes	Shows mulitple likes	P	P	P	Larry
	A comment shows the profile picture and name of who commented	Shows who commented	Shows who commented	P	P	P	Larry
	A comment shows the comment	Shows comment	Shows comment	P	P	P	Larry

Figure 50: View Likes Testing

APPENDIX C. CODE EXAMPLE

Below in Figure 51: Code Example, there is an example of the code that Larry and Matt completed for Pet Connect.

The code pictured here is used to render the Dashboard for Pet Connect.

```
5 #Initial screen upon entering website.
6 @app.route("/dashboard")
7 @login_required
8 def index():
9     #Instantiate database connection
10    session = Database.Session()
11    currentUser = Tlbx.currentUserInfo(current_user.id)
12    #Collect dogs in your family
13    dogResults = session.query(Database.tDog).join(Database.tUser, Database.tDog.familyID == Database.tUser.familyID).filter(Database.tUser.userID == current_user.id)
14
15    #Get comments of posts
16    commentResults = Comments.getComments()
17
18    #Get reacts of posts
19    reactResults = Reacts.getReacts()
20    yourReacts = Reacts.yourReacts()
21
22    #Get Posts
23    postResults = Posts.getPosts()
24
25    likes={}
26    like =[]
27    for react in postResults:
28        likes[react.postID] = 'Like'
29    for yourReact in yourReacts:
30        if yourReact.postID in likes.keys():
31            likes[yourReact.postID] = 'Unlike'
32    for react in postResults:
33        like.append(likes[react.postID])
34    return render_template('HomePage/Dashboard.html', currentUser = currentUser, dogResults = dogResults, \
35        postResults = zip(postResults, like), commentResults = commentResults, reactResults = reactResults)
```

Figure 51: Code Example

APPENDIX D. EQUIPMENT NEEDS TABLE

Below is the table (Table 3: Equipment Needs) the team completed for the IT Expo. Table 3: Equipment Needs lists the technology the team would have needed for the IT Expo. The team would have supplied their own technology, these numbers were used to determine the overall power needed for the event. Unfortunately, the IT Expo event was moved from in-person to online in a virtual environment due to the limitation on public gatherings as a result of the rapid spread of COVID-19.

Project Title:	Pet Connect
Team #	35
How many computers will your group have?	2 Laptops
Will you need an Internet connection? (Yes or No)	Yes
If yes, to internet connection. Specify Wired or Wireless	Wireless
How many power outlets will your group need?	4
Please list any other equipment you plan to have that requires electricity.	3 phones (1 charger) 1 tablet (1 charger)
Do you have any specific drop-off or pick-up requirements?	No

Table 3: Equipment Needs

APPENDIX E. FINAL POSTER

Below in Figure 52: Final Poster is the poster the Project Manager Madison created for the IT Expo. This poster highlights the key aspects of the project, while telling abstract story of people using the application Pet Connect to get together and meet with their dogs at the park for a playdate.

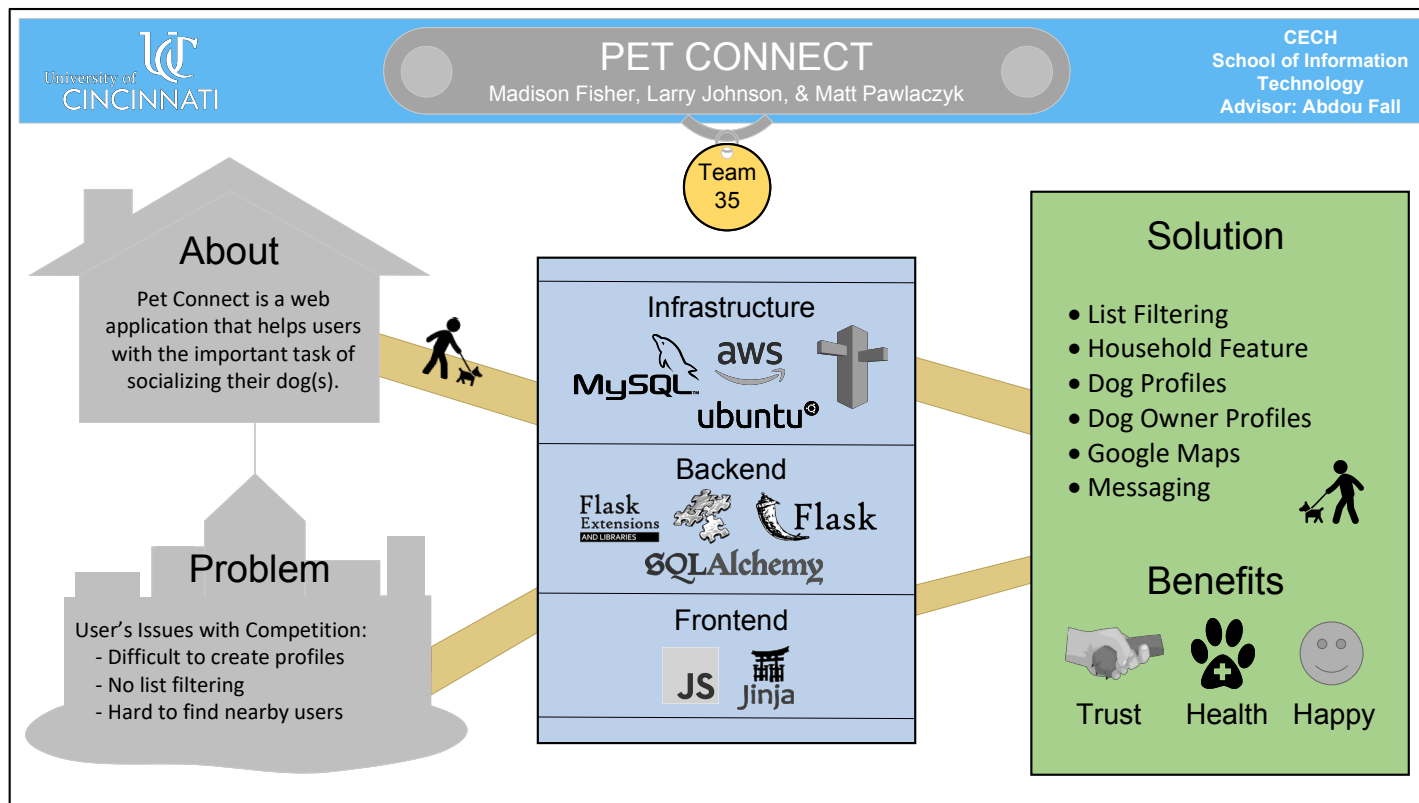


Figure 52: Final Poster