Lost Pet Finder chip/app: Requirements

CS 361: Software Engineering I

Group 16

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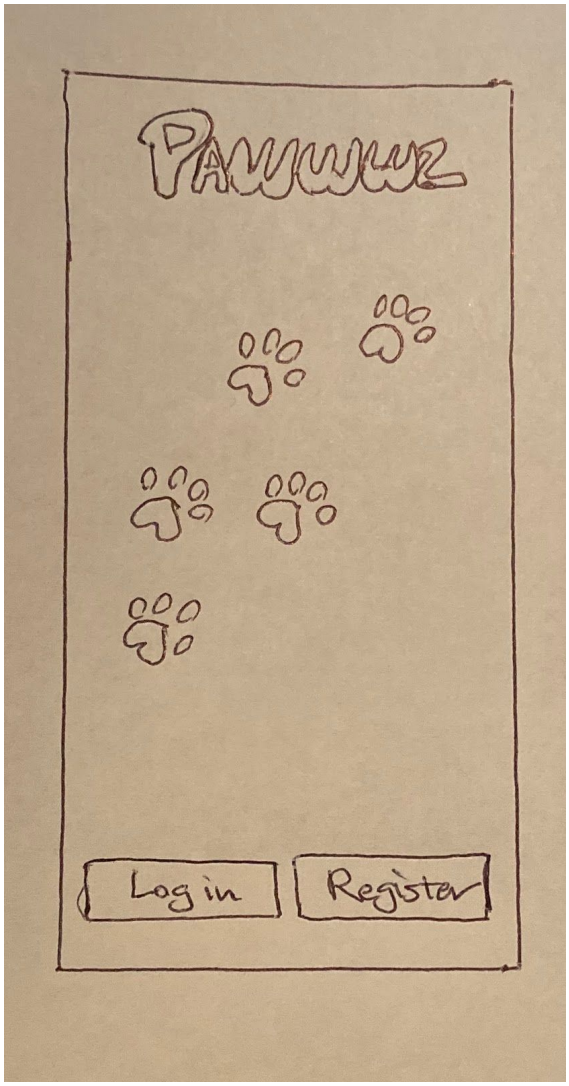
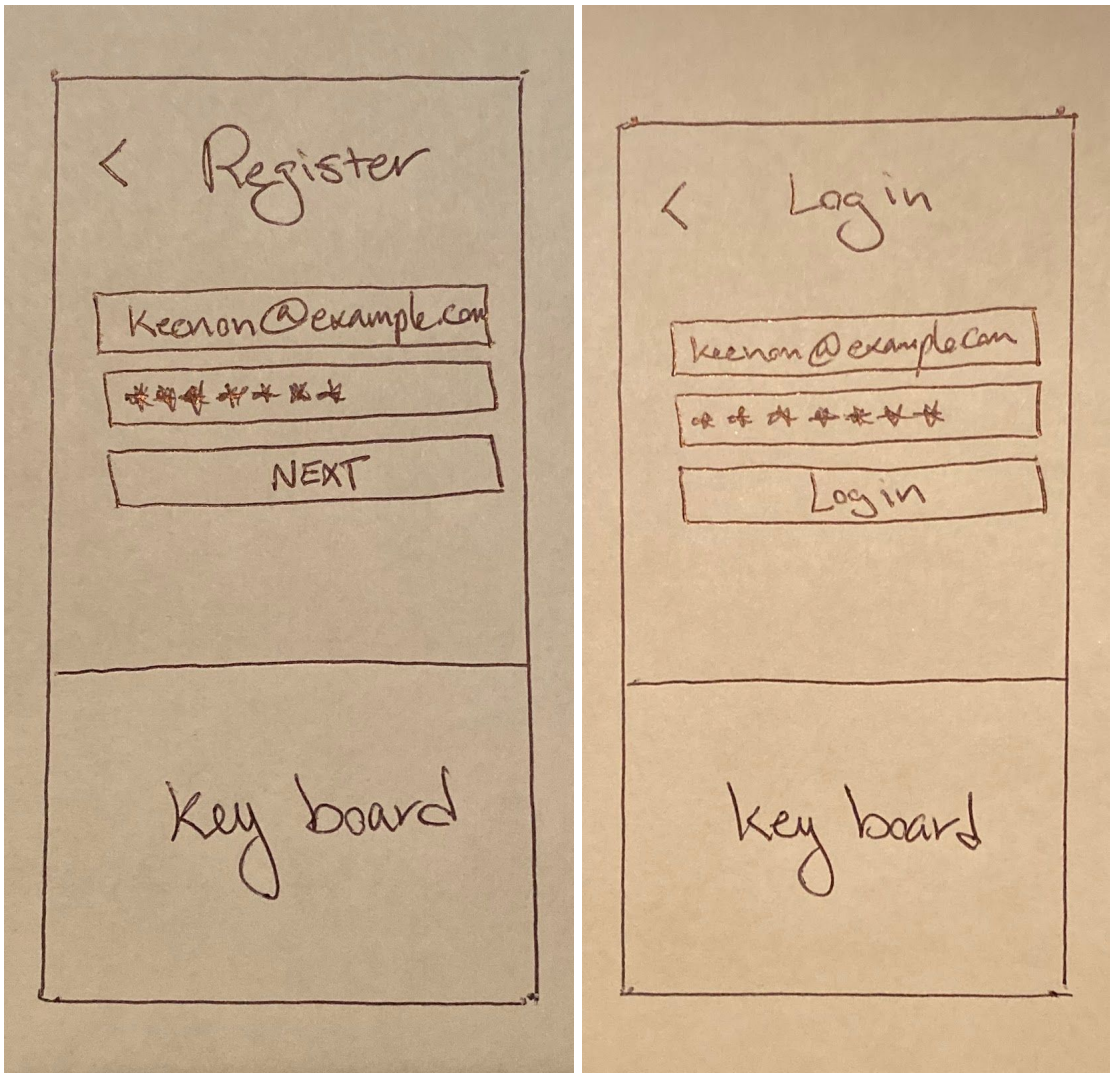
Paper Prototypes

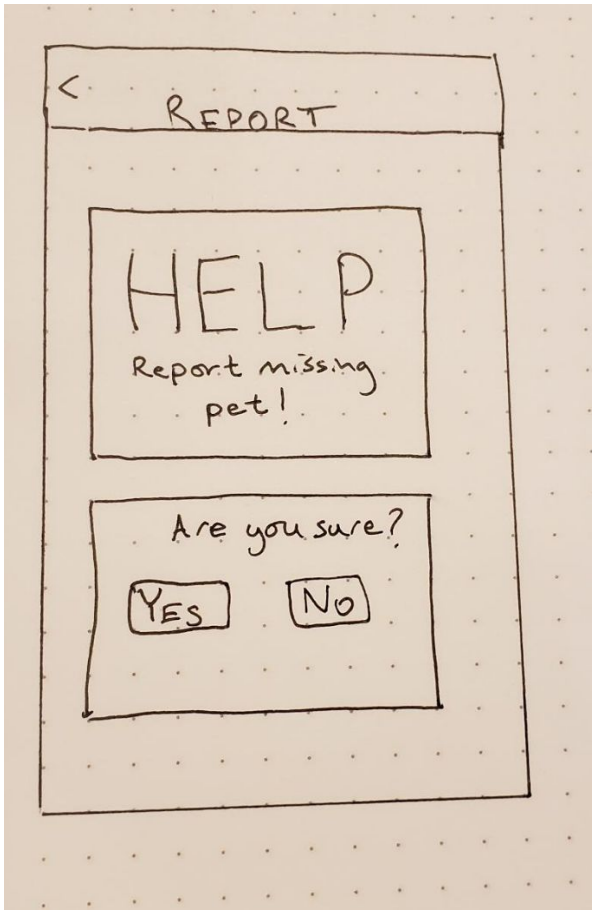
Logout Page



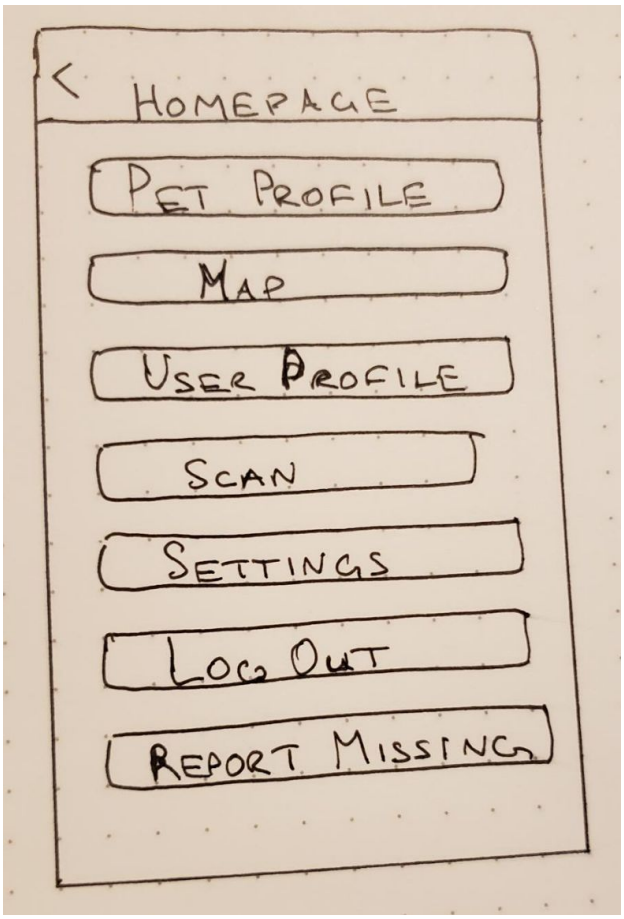
Login Pages


Register
Keenon@example.com
NEXT
Key board
Login
Keenon@example.com
Login
key board

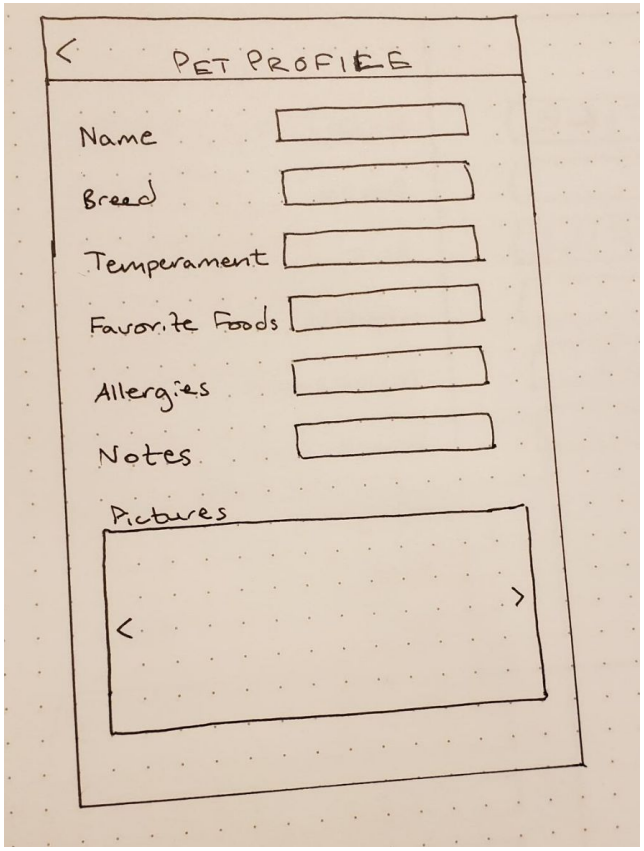
Immediate Report Page



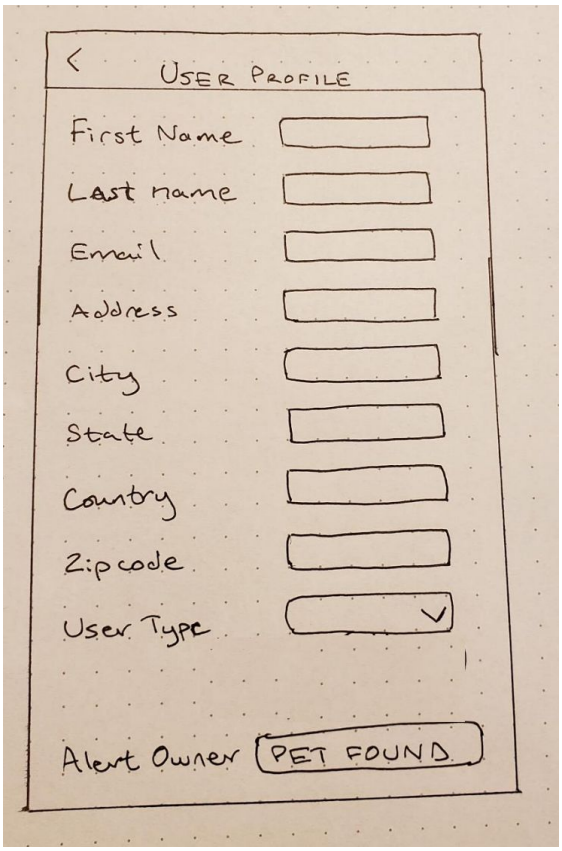
Home Page



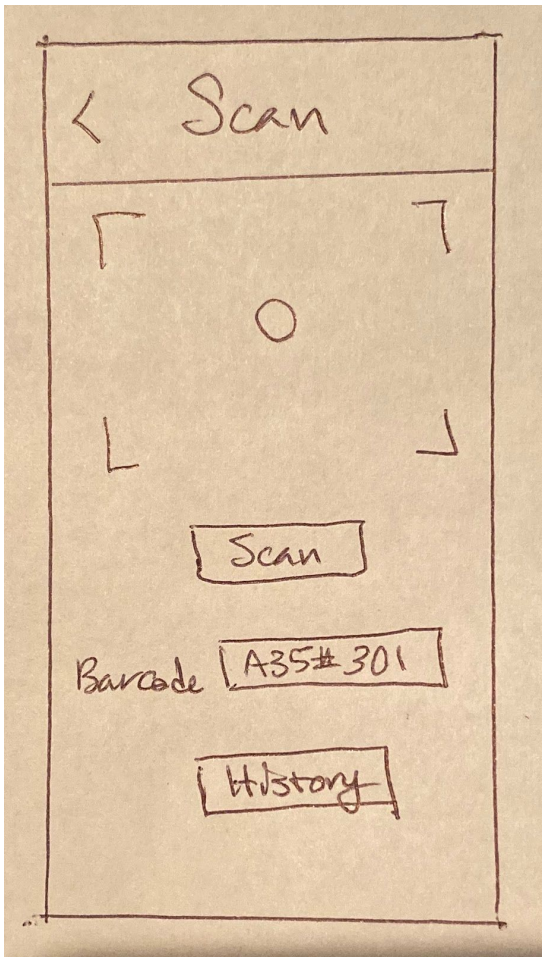
Pet Profile Page



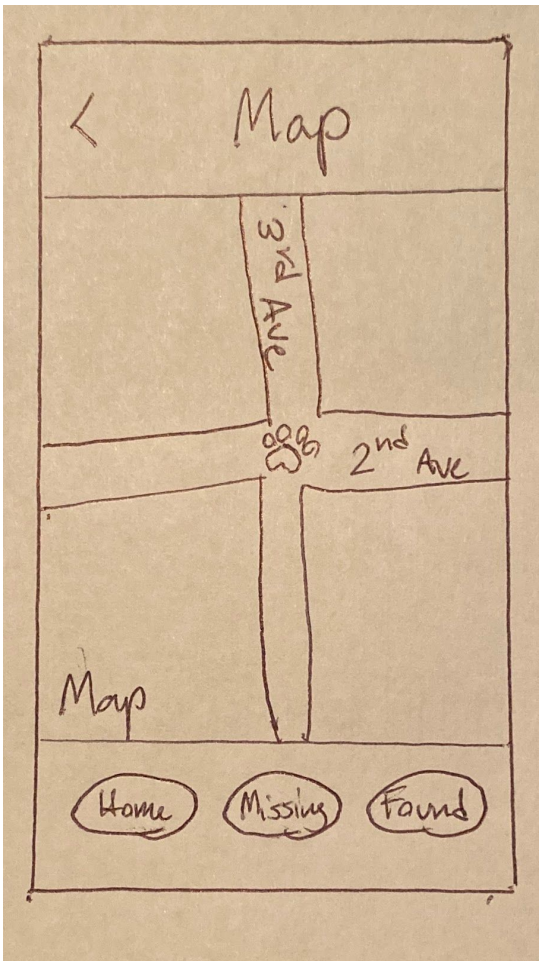
User Profile Page



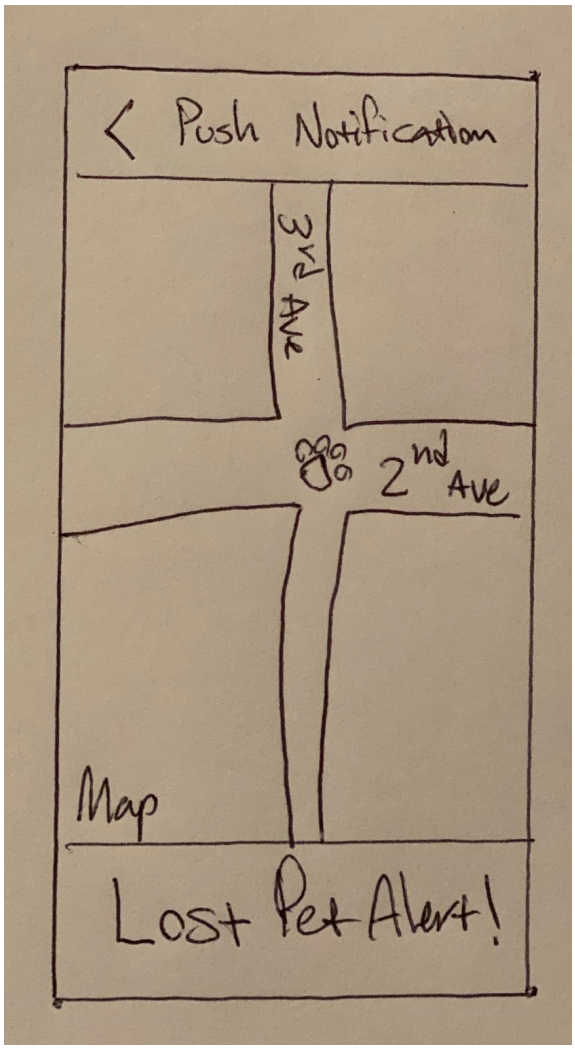
Scan Page



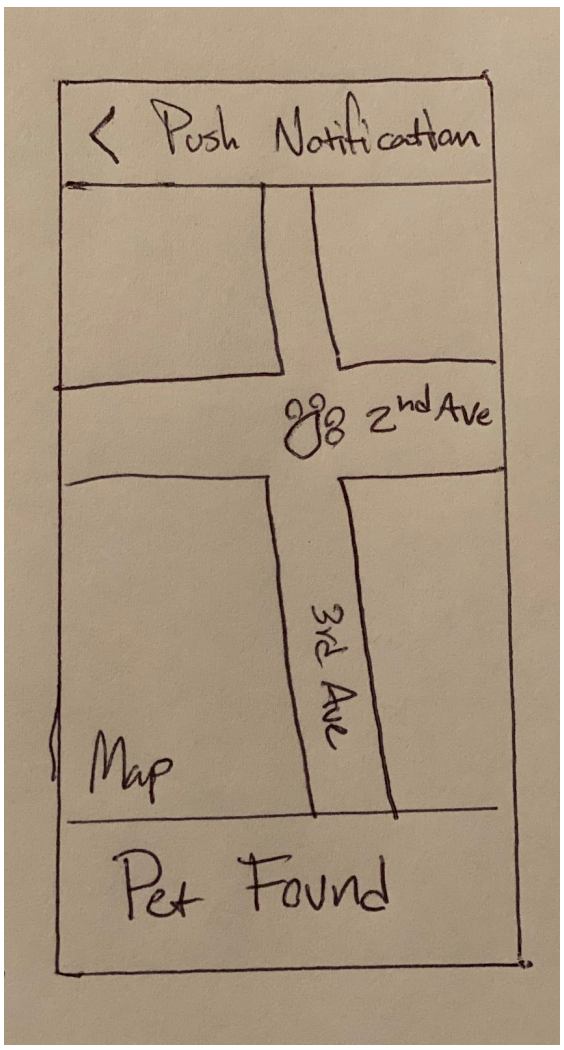
Map Page



Push Notification Page



Push Notification Page



Requirements Definition

Functional Requirement

- The app will allow app users to register themselves upon the first use of the app.
- The app will authenticate the app user's username and password before use.
- The app will contain a homepage that has buttons for the app user to click on like pet profile, user profile, scan, map, settings, report missing, and log out.
- The app will allow the app user to make their own profile.
- The app will also allow users(owners) to create profiles for their animals, which includes the pet's name, gender, breed, status, favorite food, allergies, and photos of the pet.
- The app will allow users(owners) to scan the chip of the animals who have the chip and display their information and status.
- The app will display a map that shows the GPS location of the pet based off the chip.
- The app will allow the users(owners) to update the status of their pets to missing if they are missing.
- If a pet's status has been set to missing, the app will display that the pet is missing upon scanning by another app user or shelter employee.
- The app will display the contact information of shelters close to the user(owner), so the user can contact the shelter and the shelter can retrieve the pet.
- The app will display push notifications to other app users when a user(owner) reports their pet missing.
- The app will allow other app users to see tracking information of missing pets to help locate them.
- The app will also aide other app users with dropping off the lost pet if they found them at a verified third party location like a shelter. The app will then display that the pet is located there.

- The app will allow the user(owner) to set the pet's status to "Home" at the time of creating the pet profile and after a missing pet is found/returned to the user(owner).

Non-Functional Requirement

- The app will authenticate the user's username and password within 15 seconds.
- The app will allow users(owners) to make at least 5 profiles for their pets.
- The app will allow users(owners) or other app users to scan pets at most one foot away.
- The app will allow users(owners) to at least enter pet types like cats and dogs.
- The app will display that a pet is missing within 15 seconds of receiving the notification from the user(owner).
- The app will display locations of shelters within at least a five mile radius of the user(owner) or other app user.
- The app will display a pet missing notification sent by a user(owner) to at least their local neighborhood.
- The app will display at least the name, address, and phone number of shelters listed.
- The app will display that a pet has been found within 15 seconds of receiving the notification from the app user who found it.

Use Case 1: Reporting a missing pet to those in the vicinity

Actor:

Any person who has lost their pet.

Preconditions:

- The animal in question must have had the requisite NFC chip properly implanted under their fur and possess the appropriate tag indicated they have been chipped.
- The user (pet owner) must have downloaded the pet tracking app onto their mobile device, which will have NFC chip readability feature.
- The user (pet owner) must have created a profile on the app, including verifying their address.
- The user (pet owner) must have created a profile on a neighborhood-based social website.
- The user (pet owner) must determine the notification proximity, ranging from as small as a neighborhood to a large as a country.
- The user (pet owner) must have cell phone connectivity.
- The user (pet owner) must have location services on.
- The user (pet owner) must scan their pet into the database using a mobile device as a NFC scanner.
- The user (pet owner) must see that their pet is no longer under their control, or (if remote) learn that their pet is not under their control.

Postconditions:

- The system will have a record of a lost pet, including last location and profile of the user (pet owner).
- Other users of the application will have received a notification of the lost pet, with information about the last known time under control and location.

Flow of Events:

- The user (pet owner) logs into their application using username and password.
- The user (pet owner) details all known information regarding the last known location of and time pet was accounted for.
- The system records location, pet owner, and event in database.
- The database map is populated with a pin for the location of the lost pet.
- The scan result sends a notification of a lost pet to other users of the application.
- Other users of the application receive a notification of a lost pet and the details of that animal.

Use Case 2: Locating / Helping with capture of lost pets

Actor:

- Owner of the pet whom is reportedly missing.
- Authorized users of the application within a 3 mile radius.

Preconditions:

- The user(owner) must have registered the pet and their chip on the application.
- The users of the app (all) must have accepted the terms and conditions stating that the application distributors are not responsible for the actions of others while using the application.
- The application must have location services on.
- The users must have cell service to receive lost pet notification.
- The user(owner) must have cell service to send out lost pet notification.
- The pet must be reported as missing by the owner.
- The user(owner) has allowed authorized users of the app within a 3 mile radius to also be able to track/locate the pet.

Postconditions:

- Authorized user and/or primary user(owner) has scanned pet reverting profile to a temporary “found.” And removing the location of the pet from everyone’s tracker except owner.
- If an authorized user scans the pet without the primary user(owner) in the vicinity of the application will notify the owner and provide the owner with the profile and contact information of the user who has retrieved the pet.
- User(owner) has retrieved his/her pet and has reverted the profile back to “found” instead of “missing.”

Flow of Events:

- User notices on tracker that pet has escaped and/or is lost.
- The user can then use the software to locate the pet.
- If user is incapable of locating the pet right away then user has the choice to send out a notification to all authorized users of the application within x amount of miles of his pet allowing others to see the location of his pet and help bring it to safety.
- If user(owner) finds pet then user(owner) will revert profile from “missing” back to “found” removing the location of his/her pet from others application, and letting authorized users know the pet has returned to safety.
- Else if, authorized user finds pet the authorized user will scan pet’s chip using the application scanner. This will change the profile of the pet to a temporary status “found.” After this process the application will automatically send the contact information and profile of the authorized user whom scanned the pet to the primary user(owner). Immediate contact is advised.
- Pet is back to safety in the hands of primary user(owner).

Use Case 3: Notifying/Reporting pet to local shelters

Actors:

- Owners who have lost their pet.
- Persons who are reporting an animal that appears to be a missing pet.
- Animal shelters and animal control.

Preconditions

- User(owner) has lost their pet and reports their pet as missing on the app.
- Authorized users of the app who have found a missing pet and have reported them to the user(shelter) and/or delivered them to the user(shelter).
- The user(shelter) is registered and authorized with the app.
- The user(owner) of the pet may not be willing to give their contact information or meet with a stranger who uses the app and may have found their pet, but they would trust a verified animal shelter.
- Shelter personnel are trained and authorised to use the app.
- An app user who has found the pet may not be willing to capture it themselves and/or contact the pet owner.

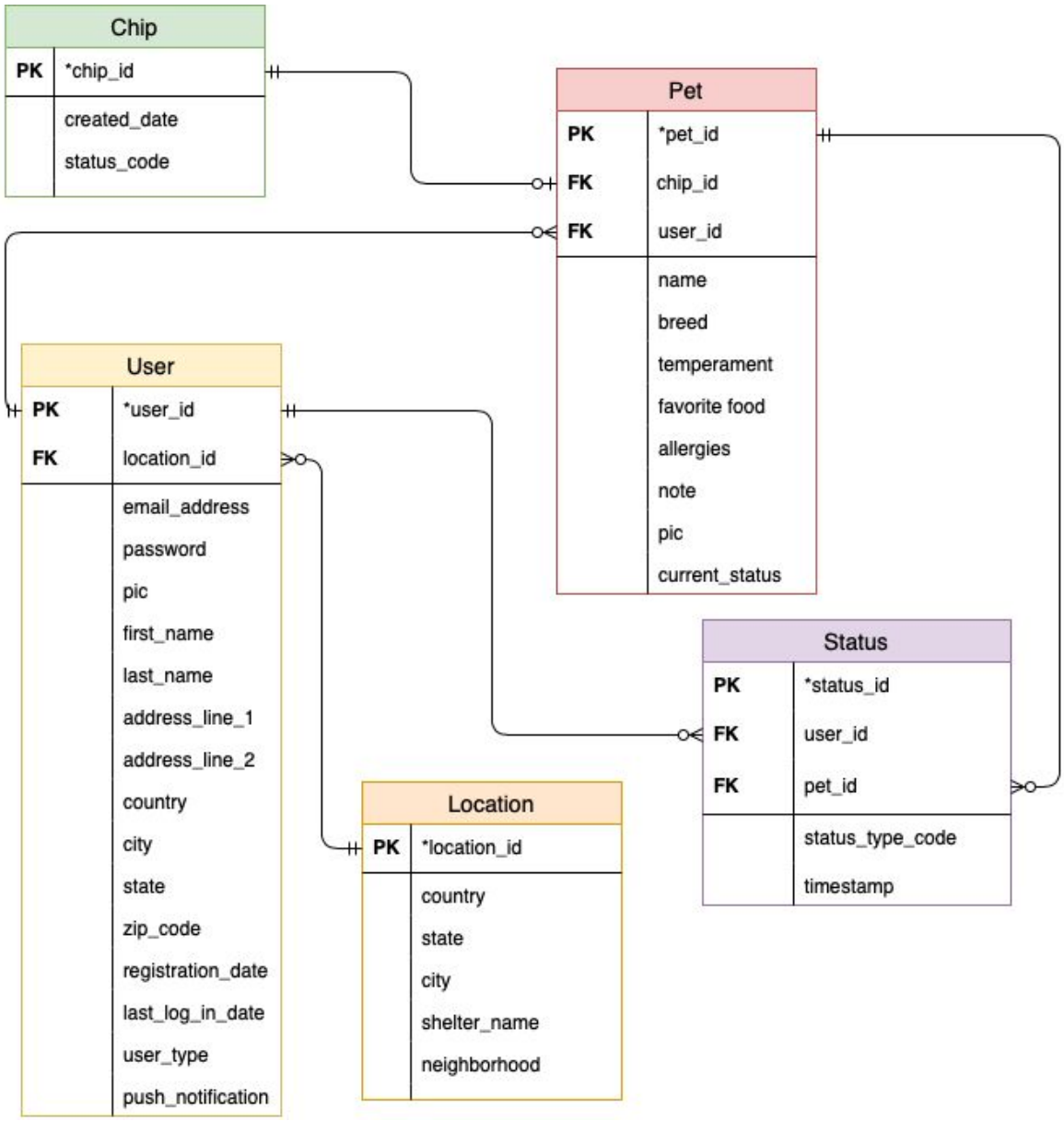
Postconditions

- User(Shelters) are notified of a missing pet.
- If the pet is located and brought to the user(shelter), the user(shelter) is easily able to send a direct message to the user(owner) informing them that their pet has been found.
- The user(owner) is able to validate that their pet's location is a shelter.
- The user(owner) is able to use the app's feature to locate the user(shelter) and reunify with their pet.

Flow of events

- A user(pet owner) reports their pet as missing.
- Users of the app in the vicinity are notified of a missing pet via push notifications.
- User(Animal shelters) within the vicinity are notified of a missing pet. They are notified of the pet's the identifying characteristics such as name, age, gender, breed, etc.
- The person who has found the pet delivers the pet to the shelter. The person who found the pet may or may not be a user of the app.
- The user(shelter) can scan the pet and verify its identity, as well as the name of its user(owner).
- The user(shelter) that received the pet notifies the user(pet owner).
- The user(pet owner) can verify their pet's location and retrieve their pet at the shelter.
- The pet's status will be set to found.

Entity Relationship Diagram:



Requirements Specification

Functional Requirement

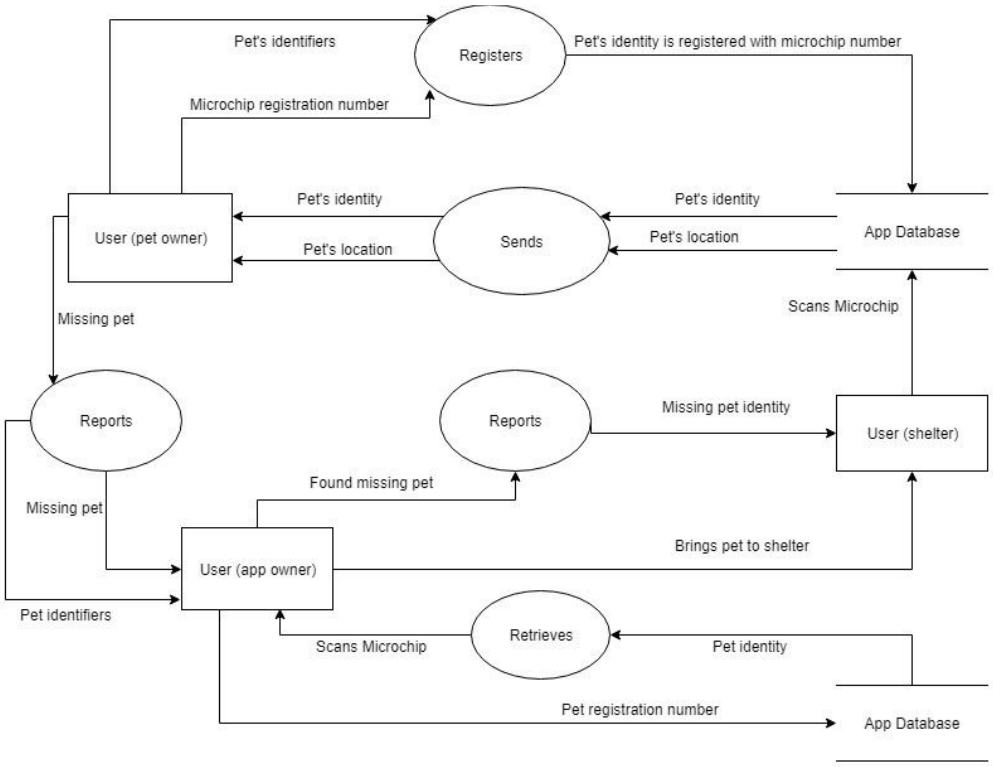
- The information entered by the app user upon creation of an account through a form will be used in an INSERT command to add their information to the database.
- The information entered by the user(owner) upon creation of a pet profile will be used in an INSERT command to add the pet's information to the database and tie it into the user's account through a relation in the database.
- User information(username and password) will be checked against information in the database upon user login.
- The system will receive map updates from Google through the API.
- After a user(owner) indicates that a pet is missing, the system will send out a push notification and display the pet's information on the map that other app users in the area can see missing pets on.
- The system will display a pop-up box that asks the user(owner) if they are sure they want to send out the missing pet alert before it is sent. The system will act based on the user's input by either continuing with the action or returning to the same screen.
- The system will also perform a Google search to find shelters within the area of the user(owner) with the missing pet and display this information to them.
- Other app users can request a list of missing animals from the server, the database will run a query, and return that tracking information along with displaying it on the map.
- The system will receive tracking information of the missing pet from the chip and display that to app users.
- The system will receive scans from other app users through the pet's chip if they are near the pet.

- The system will initially indicate that the pet is missing through a scan by another app user.
- The system will allow the other app users to indicate that the pet is found through the scan and send that information through the system back to the user(owner).
- The system will take the pet's tracking information off the map other app users can see once the user(owner) indicates it has been found.
- The system will indicate that the pet's status is "Home" upon pet profile creation and when the user(owner) indicates that the pet is home after it was found.

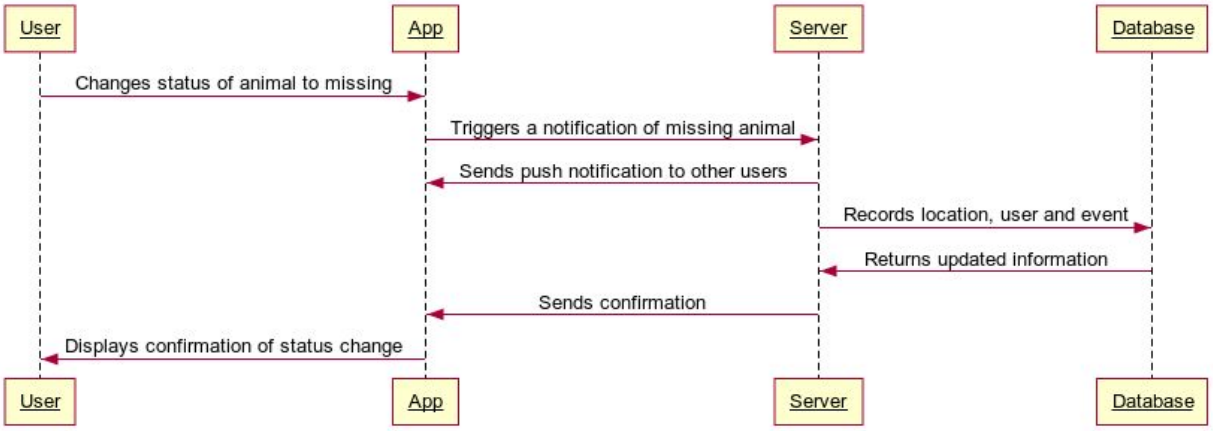
Non-Functional Requirement

- The system will check user information(username and password) from the database within 15 seconds of user attempted login.
- The system will receive map updates from Google Maps API at least once a day.
- The system will populate the map displaying missing pets with new missing pets every 30 seconds.
- The system will display the pop-up alert confirmation box within 5 seconds.
- The system will display the pet missing push notification to other app users in the area within 15 seconds.
- The system will update missing pet tracking information at least every 15 seconds.
- The system will perform a Google search which displays nearby shelters within 15 seconds.
- The system will display a missing pet's information to other app users performing scans on the pet when found within 15 seconds.
- The system will update the map displaying missing pets once one has been found within 15 seconds.

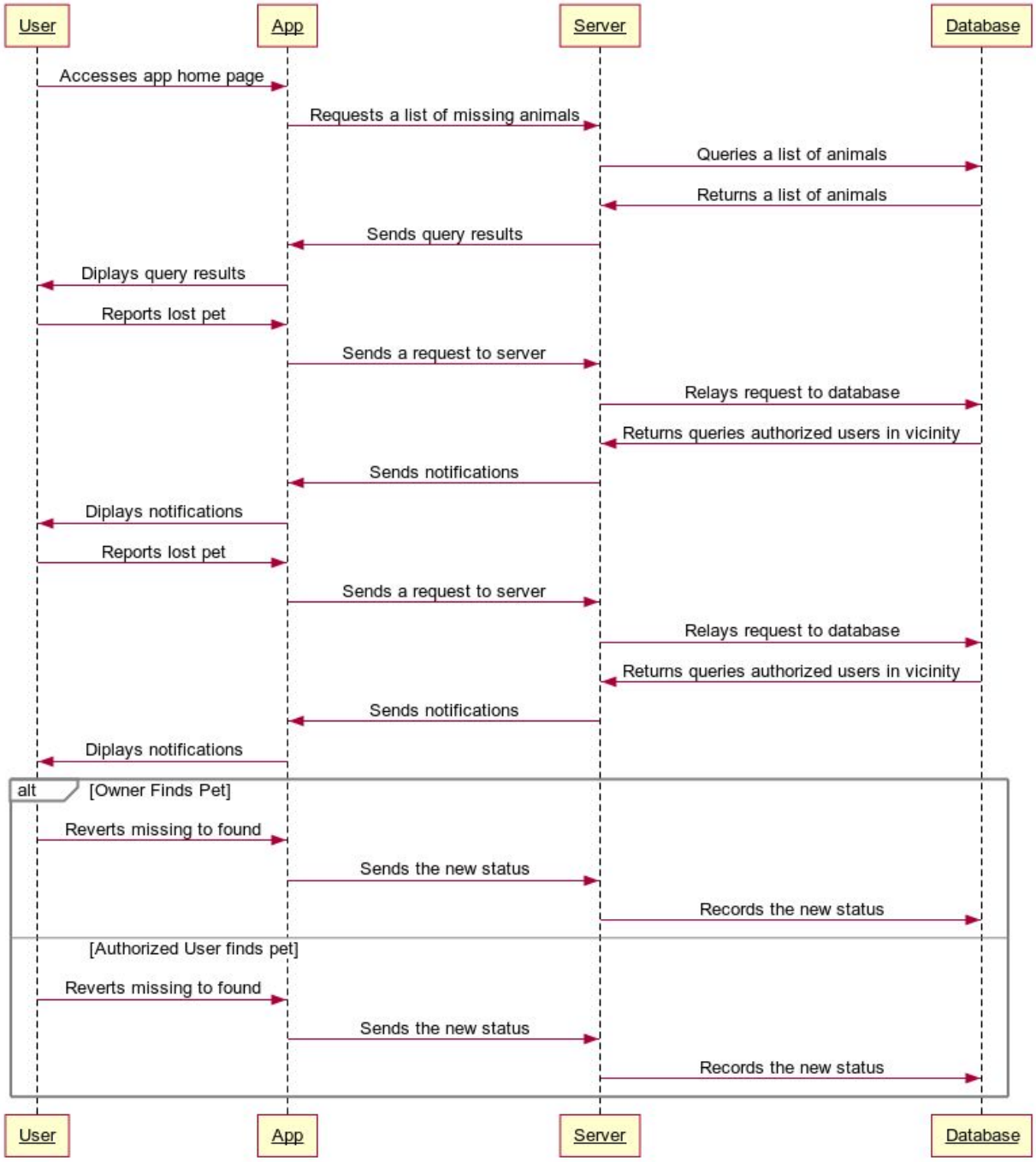
Data Flow Diagram



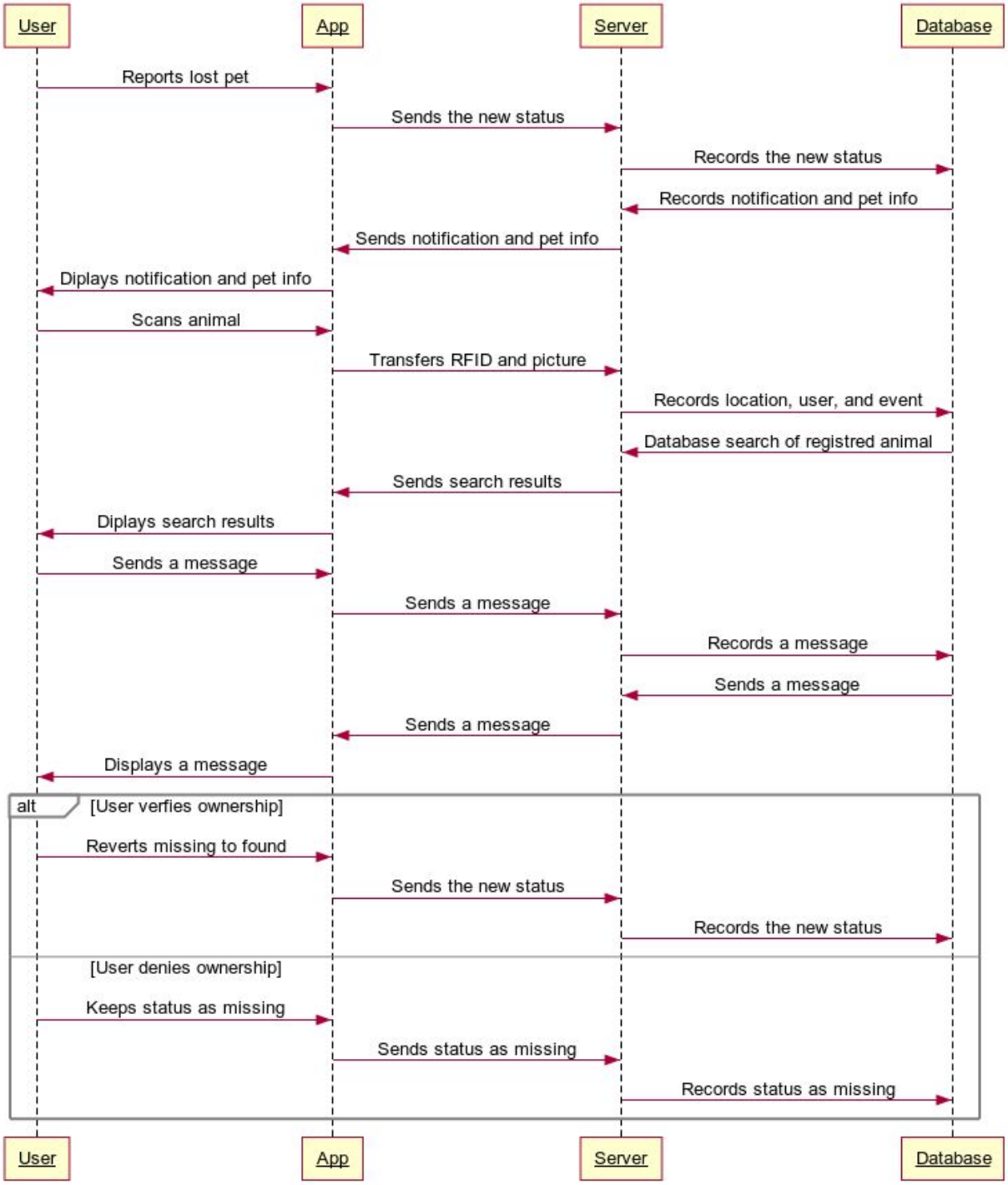
Use Case 1 Message Sequence Chart:



Use Case 2 Message Sequence Chart:



Use Case 3 Message Sequence Chart:



Requirements Definition Changes

- Changed the pet profile functional requirement to include fields like favorite food and allergies to better reflect all of the fields featured on the paper prototype.
- Added a new functional requirement which describes the different options users have on the homepage. This includes buttons on the home page like pet profile, map, user profile, etc... This requirement is important because the user will see this page upon logging in to the app.
- Added a new functional requirement which incorporates the push notifications shown on the paper prototype. This requirement is important because other users of the app will see these notifications if they have the app running on their phone when a pet missing alert goes out.
- Added a new functional requirement which describes the users ability to also set the pet's status to "Home". This requirement is important because it will be present on a couple of pages in the app and is a setting the user(owner) can set their pet's status to.
- Reduced the time it takes for the app to display a pet is missing or found for the non-functional requirement.
- Added how a message will be received by other users(through push notifications) to a Use Case 3 Flow of Event's step. This change gives more clarified to how the app will display information to other app users in the Use Case.
- Added more attributes to the Pet Entity in the Entity Relationship Diagram to have it better reflect the pet fields shown in the pet profile on the app. This change is important to keep the diagrams from HW1 consistent with the current app prototypes.
- Added a better description of how Precondition #2 in Use Case 1 will work by including the NFC chip functionality. This change gives more clarification on what the precondition is.

- Moved pre-condition ‘The user (pet owner) must have created a profile on a neighborhood-based social website’ to flow events, to comport with customer feedback.
- Removed the functional and non-functional requirements describing the direct messaging system because the app does not have that feature as of now. This is important to keep the diagrams/requirements consistent to the current prototypes.
- In Use Case 2, changed radius of alerted users when pet is reported missing from ‘x miles’ to ‘3 miles’.
- In Use Case 2, changed the wording of precondition that explains the acceptance of the terms agreement for further clarification.

Requirements Specification Changes

- Reduced the time it takes for the system to display a pet is missing or found for the non-functional requirement.
- Edited a functional requirement to include push notifications as part of the process in which other app users are notified about the missing pet. Also, added a new non-functional requirement to include the time it takes the system to display a push notification to other app users. This change is important because it incorporates that feature into the requirements.
- Added a new non-functional requirement to include the “Home” status which is used upon pet profile creation. This requirement is important because it will be present on a couple of pages in the app and is a setting the system will let the user(owner) set their pet’s status to.
- Added a new functional requirement which describes the system displaying a pop-up alert box to the user to have them confirm they want to send out a missing pet alert. Also, added a new non-functional requirement which describes how long it will take for the system to display the pop-up alert box. This addition is important because it is a feature the system will display to the user(owner).

- Removed a non-functional requirement which talked about how quick the direct messaging system works because the app will not have that feature as of now.

Customer Meeting Summary:

We reconnected with our customer (Keenon Hunsaker) to present our project, which reflected our preliminary implementation of his vision. He provided just one piece of feedback from our submission, which was to remove logging into NextDoor a precondition (as noted above). He did say that he was okay with it being part of our flow of events. He noted that he was otherwise very happy with our work so far. He was particularly happy with our GPS feature and the option to utilize a shelter as a go-between the pet owner and the pet finder.

We had already created a series of 8-10 prototype pages for our app and solicited his feedback in advance of our next submission. He made two suggestions: 1) to create a quicker route to alerting other users of their lost pet; and 2) would it be possible to create a picture carousel, which we will explore further.

As with last week, he advised he is available to discuss further whenever needed.

Team Member Contributions:

- Haya: Prototypes
- Matt: Customer Meeting
- Marc: Requirement Definition Changes
- Ryan: Requirement Definition/Specification Changes
- Shannon: Prototypes