Lost Pet Finder chip/app: Requirements

CS 361: Software Engineering I

Group 16

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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 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, 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 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 display a direct messaging system where the shelter (or person who found the pet) can contact the user(owner) and notify them of their pet's location and status.

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 30 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 allow at least ten direct message threads for users(owners) in case of a pet missing.
- The app will display that a pet has been found within 30 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 much be of the kind that supports a NFC scanner.
- 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 with 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 x mile radius.

Preconditions:

- The user(owner) must have registered the pet and their chip on the application.
- The users of the app must have accepted the terms and conditions stating that the application owners are not responsible for the action's others take 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 x 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.

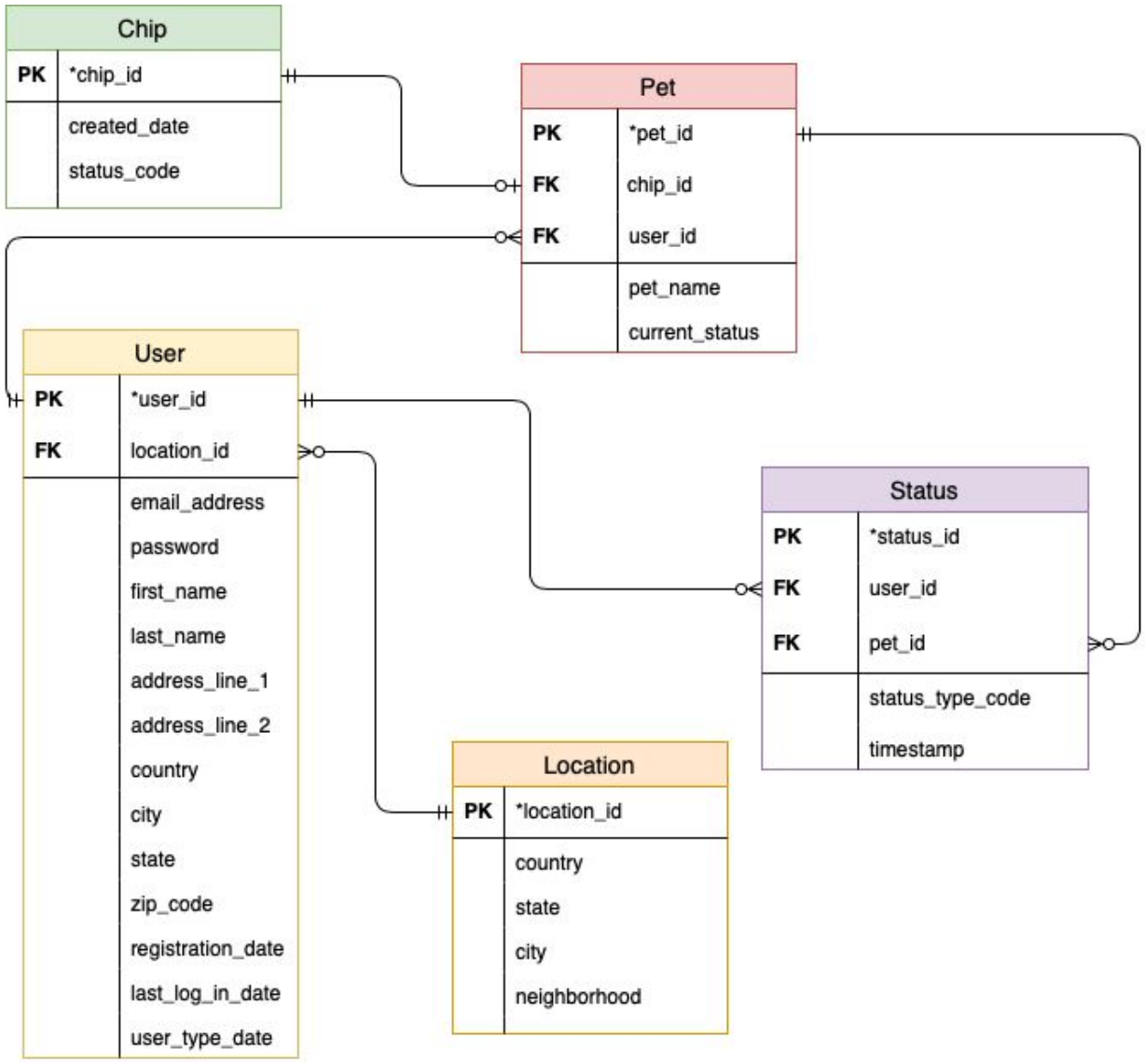
Postconditions

- 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.
- 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

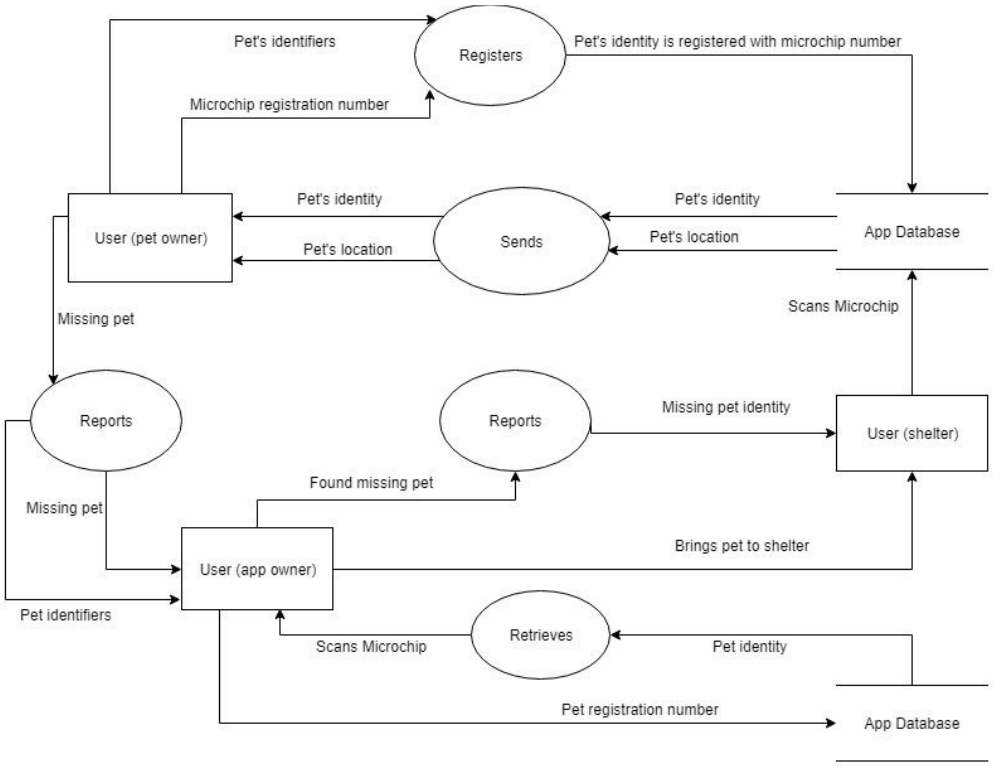
- The information entered by the app user upon creation of an account through a form will be used in an INSERT command to add their information to the database.
- The information entered by the user(owner) upon creation of a pet profile will be used in an INSERT command to add the pet's information to 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 display this information on the map that other app users in the area can see missing pets on.
- 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.

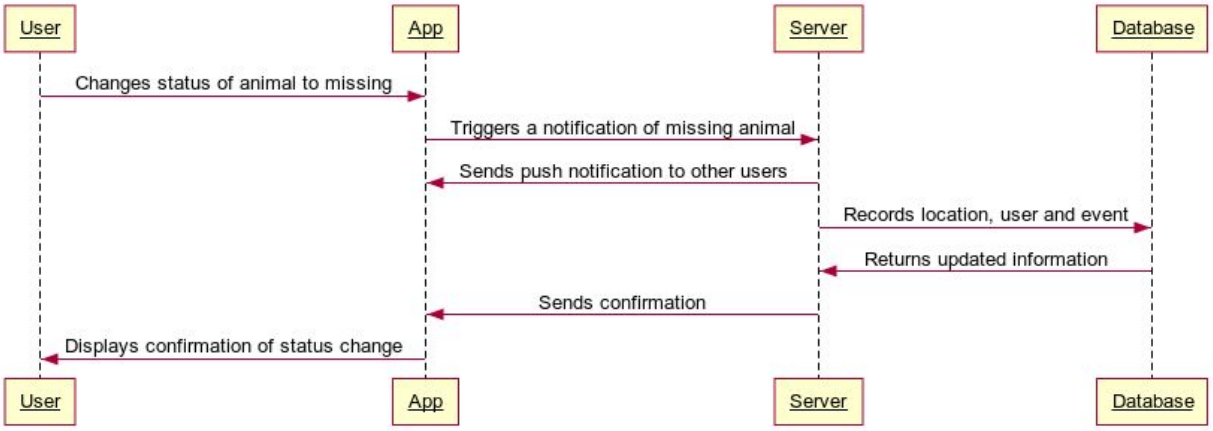
Non-Functional Requirement

- 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 update missing pet tracking information at least every 30 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 display messages sent from one app user to another within 5 seconds.
- The system will update the map displaying missing pets once one has been found within 30 seconds.

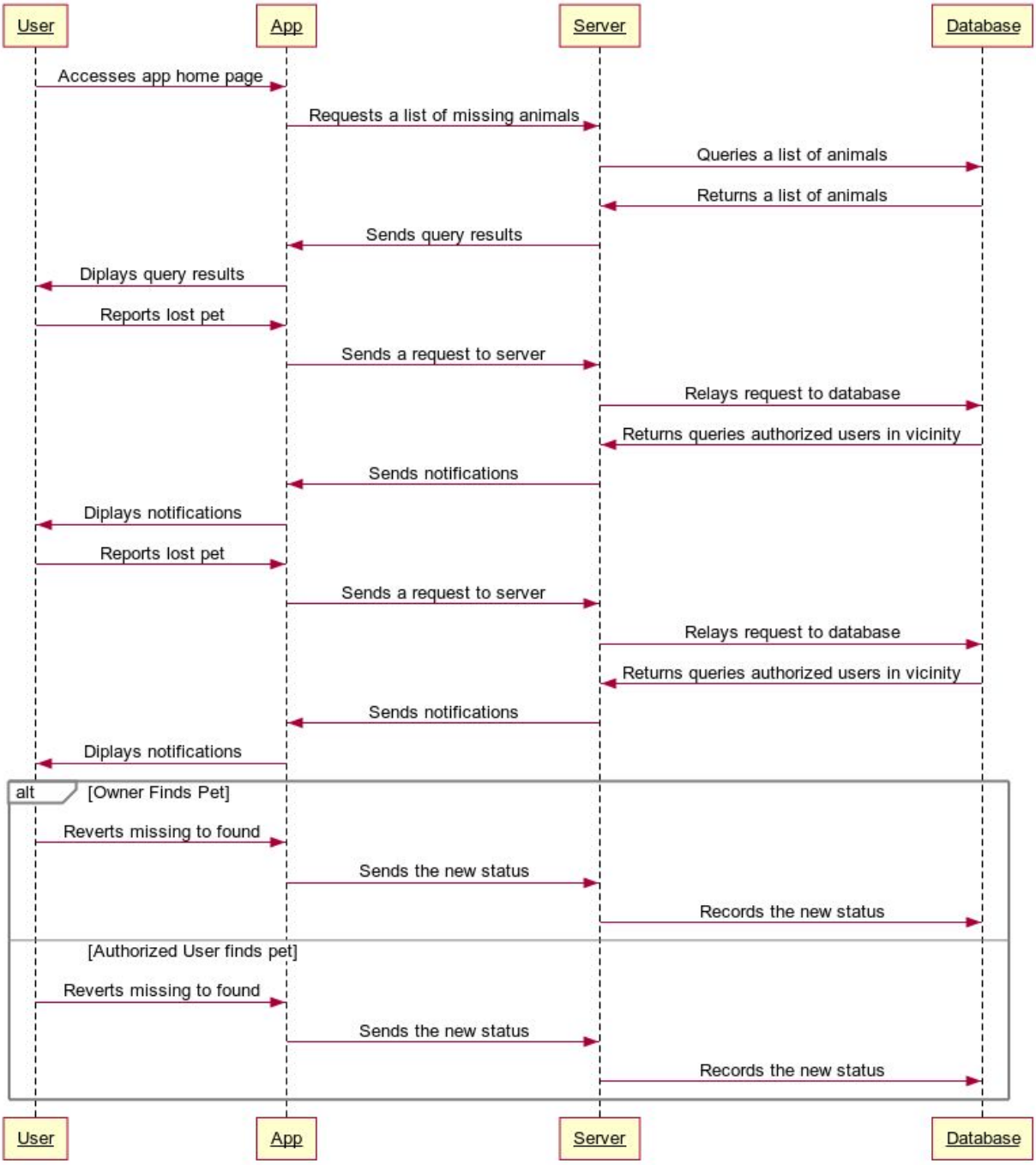
Data Flow Diagram



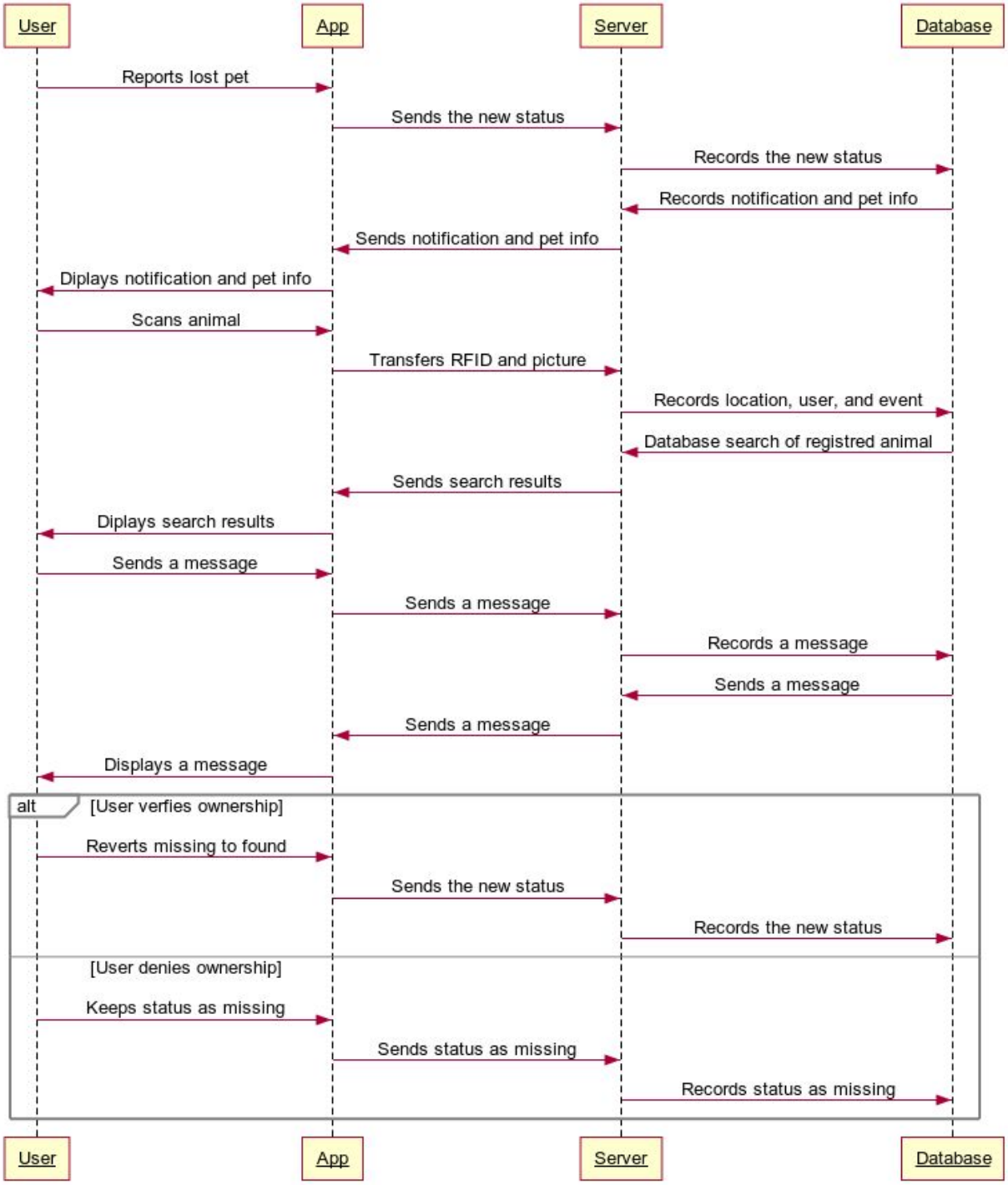
Use Case 1 Message Sequence Chart:



Use Case 2 Message Sequence Chart:



Use Case 3 Message Sequence Chart:



Customer Meeting Summary:

We contacted our customer (Keenon Hunsaker) first to set up a group slack channel and a group meeting time on Google Hangouts the weekend before the assignment due date. The set up was successful and we all agreed to conduct our customer meeting on Wednesday evening. He also informed us that we can contact him for any questions/information almost any day after 4 pm PST via slack or email. Our customer ran us through his vision for this project and answered all our preliminary questions we had during our Wednesday group meeting time.

Team Member Contributions:

- Haya: Use Case 3, data flow diagram
- Matt: Use Case 1
- Marc: Use Case 2
- Ryan: Requirements Definition, Requirements Specification
- Shannon: Entity Relationship Diagram, Message Sequence Charts, Customer meeting summary, formatting and submission