# Buck's Dog Training Scheduler

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Client: Lauraine Wright, Buck's Dog Training of Central NJ

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# 1 Introduction

## 1.1 Client Information

1. Client name: Lauraine Wright
2. Client title: Head Trainer
3. Client email address: lauraine@bucksdogtraining.com
4. Client employer: Lauraine Wright
5. How you know the client: Buck's Dog Training is a small business located by Emma's hometown.

## 1.2 Overview

This project is a custom website for Buck's Dog Training of Central NJ, designed to improve upon their current Embr AI site to better serve their clients' needs. While their existing website contains information about the company and services for a general audience, scheduling is done manually over phone or email, and it lacks personalized features for current clients. To address this, the new website will implement unique features for employees and customers. Customers can sign up for an account which allows them to view their scheduled appointments digitally and gives them access to client-centric features like their appointment history and reports on their individual dogs' training progress. All of this displayed information will change depending on the logged-in account. This approach will allow for a more streamlined and personal experience with the site.

The main purpose of this project is to provide the clients and employees of Buck's Dog Training a user-friendly website tailored to the individual logged-in client. Appointment scheduling allows employees to book clients' sessions directly on the website, and appointment history and progress offer insights for the client. The website will also include personable features for all website visitors, like information on their services, photo galleries, a mission statement, and pages for each trainer on the website. The proposed features for the new app will help foster a sense of community for current and prospective clients and create a personalized experience to strengthen client relationships.

Employees will have privileges with trainer accounts to create and manage clients' appointments, add to the photo galleries, edit their personal subpage, and edit dogs' progress reports.

## 1.3 Key Features

Some key features of the project are:

- Appointment scheduling for employees to manage customer appointments, including creating appointments and deleting appointments
- Trainers can manage content like appointments, photo galleries, personal pages, and dogs' reports through admin accounts

- Viewable Appointment History/Future Appointments by Dog Name for each customer's account
- Viewable Dog Training Progress Reports after each appointment
- Automatic Responses to Client Inquiries like appointment creations, appointment reminders, or general questions
- Services information, photo galleries, mission statements, and trainer pages viewable for all website viewers.

## 1.4 Why this Project is Interesting

This project stands out as a capstone because it has real-world impact for a small business and its clients, allowing them to communicate and operate more efficiently while also keeping a sense of community. Dog training is engaging, and this project will help make that service more accessible and user-friendly.

This project is enticing because it contributes to a service that directly supports people and their pets, and it involves a feature-rich backend for both employees and clients and requires an aesthetic front end to effectively share the company's mission and services.

This project impacts the daily-life of the employees and clients of Buck's Dog Training. The features are useful to make the roles of both easier.

## 1.5 Areas of CS required

The relevant fields of computer science for this project are: Web development, Database management, and Security.

# 2 Requirements

## 2.1 User Roles

### 2.1.1 Admin

Has all the functionality of the trainers and can CRUD trainer and user accounts as well as directly edit the website.

### 2.1.2 Trainer

Can make appointments, change their schedule, write trainer reports, and edit their personal page / bio.

### 2.1.3 User

Can view trainers and their bios, see their dogs schedule, and contact an administrator to book an appointment.

### 2.1.4 Site Visitor

Can view the site and see trainers and their bios but cannot view their schedule as they do not have an account. Can make an account. Can contact an administrator to book an appointment

## 2.2 Functional Requirement User Stories

| ID | Story Title | Points | Description |
|---|---|---|---|
| 1 | Register | 2 | As a site visitor, I want to create an account so that I can keep track of my scheduled appointments. |
| 2 | Log in / Log out | 1 | As a user, I want to log in and out of my account so that I can access my appointment information. |
| 3 | CRUD users | 8 | As an admin, I want to CRUD users of the site so that I can edit them. |
| 4 | CRUD trainer | 8 | As an admin, I want to CRUD trainers so that I can edit them. |
| 5 | Reset Password | 2 | As a user, I want to reset my password so that I can access my account if I forget login info. |
| 6 | CRUD services offered | 8 | As an admin, I want to CRUD the services we offer so that I can edit them if they change. |
| 7 | Set open appointment times | 3 | As a trainer, I want to set available appointment slots so that I can book appointments. |
| 8 | Block out unavailable times | 2 | As a trainer, I want to block out my unavailable times so that other trainers know when I'm not working. |
| 9 | CRUD appointments | 8 | As an admin, I want to CRUD all scheduled appointments so that I can make changes if necessary. |
| 10 | Filter appointments | 1 | As an admin, I want to filter all appointments by date or by dog so that I can narrow my searches. |
| 11 | CRUD my own dogs | 8 | As a user, I want to CRUD my own dogs to my profile so that I can edit my own info. |
| 12 | View trainer info page | 2 | As a user, I want to view the trainer info page so that I can see who is training my dog. |
| 13 | CRUD dog | 8 | As an admin, I want to CRUD dogs so that I can link multiple dogs to one account. |
| 14 | Appointment confirmation | 1 | As a user, I want to receive appointment confirmations when my appointment is created so that I can confirm it was made. |
| 15 | Appointment reminder | 1 | As a user, I want to receive appointment reminders by email so that I don't forget about my appointment. |
| 16 | View past/future scheduled appointments | 2 | As a user, I want to view my past and future appointments so that I can see everything I scheduled. |
| 17 | Search appointments by dog | 1 | As a user, I want to filter my appointments by dog name so that I can stay organized with multiple dogs. |
| 18 | Create training report | 2 | As a trainer, I want to create training progress reports so that customers can see progress. |
| 19 | Delete training report | 2 | As a trainer, I want to delete training progress reports so that I can fix any mistakes. |

| | | | |
|---|---|---|---|
| 20 | View training report | 2 | As a user, I want to view my dog's training report so that I can see their progress. |
| 21 | Upload to gallery | 2 | As an admin, I want to upload photos to a gallery so that site visitors can see them. |
| 22 | Remove from gallery | 2 | As an admin, I want to remove a photo from the gallery so that I can fix any mistakes. |
| 23 | Browse gallery | 2 | As a site visitor, I want to browse the photo gallery so that I can see examples of dogs that were trained. |
| 24 | View mission statement | 1 | As a site visitor, I want to view the mission statement so that I can see the company's values. |
| 25 | Contact trainer | 1 | As a site visitor, I want to contact a trainer so that I can ask any general inquiries. |

### 2.3 Non-Functional Requirements

| ID | NFR Title | Category | Description |
|---|---|---|---|
| 1 | Window size compatibility | Portability | Site should be usable on different window sizes |
| 2 | Password security | Security | Create account should encourage strong password |
| 3 | Admin and trainer permissions | Security | Only the admin and trainer has access to edit the site |
| 4 | Social media links | Usability | Social media links should be visible and clickable |
| 5 | Include company logo | Usability | Company logo should be visible throughout site pages |
| 6 | Blue color theme | Usability | Site should have a blue color theme to match the logo |

# 3 Iterations

## 3.1 Iteration 1 Feb. 12

### 3.1.1 Plan

| Planned User Stories | Points |
|---|---|
| S1: Register | 2 |
| S2: Log in/Logout | 1 |
| S3: CRUD users | 8 |
| S4: CRUD trainer | 8 |
| S5: Reset password | 2 |
| Total points planned: | 21 |

This iteration is mainly focused on setting the foundation for the project with a stable UI, back-end, and database for user storage. In addition to these stories, this iteration focuses on setting up the project's environment and frameworks.

### 3.1.2 Results

| Planned User Stories | Points | Contributor | Status |
|---|---|---|---|
| S1: Register | 2 | Will and Emma | Done |
| S2: Log in/Logout | 1 | Will and Emma | Done |
| S3: CRUD users | 8 | Will | Done |
| S4: CRUD trainer | 8 | Will | Unfinished |
| S5: Reset password | 2 | Emma | Done |
| | | Total points Completed: | 13 |

Table 1: Table for User Story statuses

For the most part, the team kept on track with the plan with the exception of S4, CRUD trainer. While partially implemented, this story remains uncompleted due to being unsure how to allow an admin to manually create an auth account (trainer) from an admin panel in the project.

S1 and S2 had multiple contributors. The work was split between building the UI and handling user input, and connecting the input to firebase.

| Team Member | Points Attempted | Points Completed | Hours Worked | Cycle (Points/Hours) |
|---|---|---|---|---|
| Emma | 5 | 5 | 5 | 1 |
| Will | 19 | 11 | 10 | 1.1 |

Table 2: Individual Team Metrics

This iteration resulted in fast cycles for all team members. As stated above, this iteration focused on setting up the project, which means some hours spent doing technical work were not included in Table 2. In addition to the user stories above, the team spent time setting up the project environment, fixing module dependencies, creating static placeholder pages and page routing, and setting up the database.

### 3.1.3 Updated Class Diagram

An updated class diagram was treated and is visible in section 4.1.2. While it only updates a relation between a Dog and an Appointment, the class diagram is open to more change in Iteration 2 when the team begins to focus on making the scheduler component.

#### 3.1.4 Testing

| Testing File | Statement Coverage (%) | Branch Coverage (%) |
|---|---|---|
| SignIn | 92 | 100 |
| LogIn | 73.68 | 50 |
| ResetPassword | 100 | 50 |
| Averages: | 88.59 | 66.66 |

Table 3: Iteration 1 testing coverage

The testing for this iteration includes the auth-related files. We plan on improving the Jest setup in the future to make it easier to test all features of the project. Currently, the statement coverage meets the standard of 60%. We plan on going back and increasing the coverage in the future.

In addition, the branch coverage for LogIn and ResetPassword are relatively low. This is due to each file only containing two branches: successful form submission and unsuccessful submission. The unsuccessful branches only contain json response error messages.

#### 3.1.5 Retrospective and Reflection

Looking back at this iteration, the team worked well to complete tasks. The team communicated through texting and calls when necessary and always answered within a reasonable time, so the current means of communication works well for the team.

In terms of software, the team learned to not underestimate the time needed to fix bugs and framework related errors. This will become more important as the project gets larger. The team also learned that it's best to push code a little bit at a time, which helps promote working in small increments over the course of a few days.

#### 3.1.6 Planning for Iteration 2

For iteration 2, within the first week, we plan to tie up loose ends from iteration 1, including S4 CRUD Trainer and coverage numbers. At the same time, we plan to set up the foundation for the scheduling feature.

### 3.2 Iteration 2 Feb. 26

#### 3.2.1 Plan

| Planned User Stories | Points |
|---|---|
| S6: CRUD services offered | 8 |
| S7: Set open appointment times | 3 |
| S8: Block out unavailable times | 2 |
| S9: CRUD Appointments | 8 |
| Total points planned: | 21 |

### 3.2.2 Activities

### 3.2.3 Retrospective

## 3.3 Iteration 3 March 19

### 3.3.1 Plan

| Planned User Stories | Points |
|---|---|
| S10: Filter appointments | 1 |
| S11: CRUD my own dog | 8 |
| S12: View trainer info page | 2 |
| S13: CRUD Dog | 8 |
| S14: Appointment confirmation | 1 |
| S15: Appointment reminder | 1 |
| Total points planned: | 24 |

### 3.3.2 Activities

### 3.3.3 Retrospective

## 3.4 Iteration 4 April 2

### 3.4.1 Plan

| Planned User Stories | Points |
|---|---|
| S16: View past/future scheduled appointments | 2 |
| S17: Search appointments by dog | 1 |
| S18: Create training report | 2 |
| S19: Delete training report | 2 |
| S20: View training report | 2 |
| Total points planned: | 9 |

### 3.4.2 Activities

### 3.4.3 Retrospective

## 3.5 Iteration 5 April 16

### 3.5.1 Plan

| Planned User Stories | Points |
|---|---|
| S21: Upload to gallery | 2 |
| S22: Remove from gallery | 2 |
| S23: Browse gallery | 2 |
| S24: View mission statement | 1 |
| S25: Contact trainer | 1 |
| Total points planned: | 8 |

### 3.5.2 Activities

### 3.5.3 Retrospective

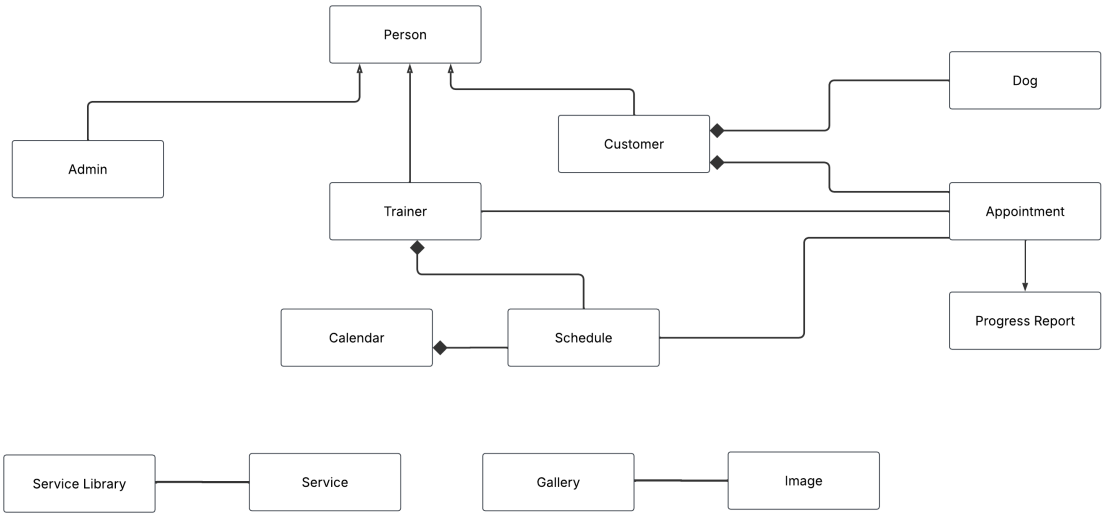
# 4 Final System Architecture and Design

## 4.1 Architecture

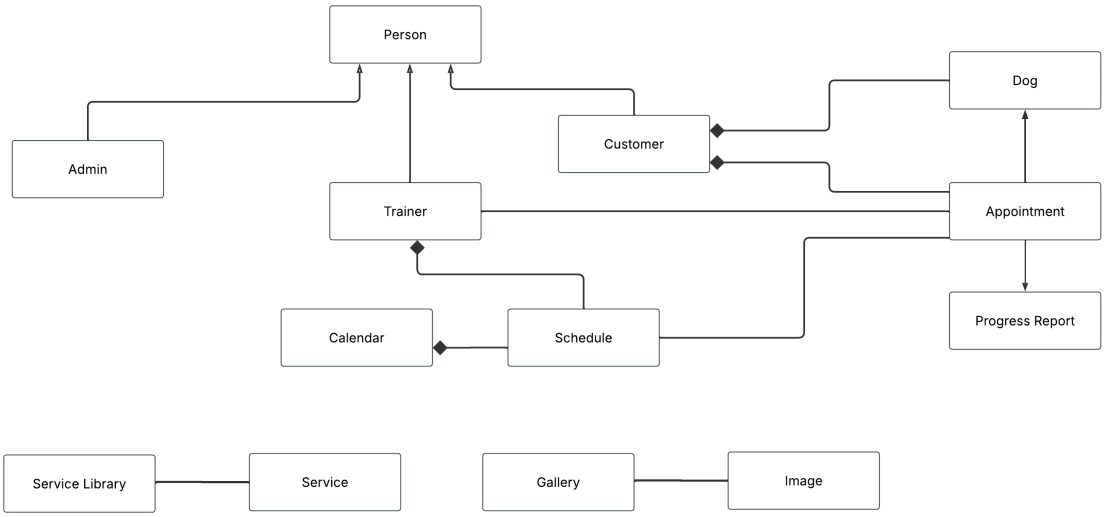
For this project, we use layered architecture. We chose this particular architecture due to prior experience with using it.

The layers we include are the client-sided layer, the business logic and the database layer. The client layer contains all the HTML and client-oriented visuals and buttons that facilitate the business-logic. the business logic layer contains the server-sided Node.js features and routes to facilitate communication with the database. The database layer is firebase for this project and is the persistent storage for the project's information.

### 4.1.1 Class Diagram



### 4.1.2 Updated Class Diagram Iteration 1




## 4.2 Technology

The main programming language we use for this project is Javascript, chosen because of prior experience with this programming language for similar website development projects.

The main frameworks and libraries we use are:

- NodeJS
- React
- Jest
- Javascript Sessions

We use NodeJS for the website's environment, and the React library to develop the front-end of the website. For testing, we opt for the Jest testing framework since it is one of the most used testing frameworks for Javascript software, and it is compatible with NodeJS and React. Javascript Sessions is used to help maintain persistent user data with each log in.

For persistent data storage, we use Firebase for a NoSQL database. We use this because of previous experience with Firebase, and we expect the database's capabilities to be sufficient for the needs of the website traffic.

## 4.3 Data

Looking at the use of Firebase in-depth, we include numerous collections and subcollections:

- Person Collection: a person contains name, usernameand email
  - Admin Subcollection: an admin contains admin permission (true or false).
  - Trainer Subcollection: a trainer contains biography and schedule.

  - Customer Subcollection: a customer contains appointments and dogs (array of Dog Collection)

- Dog Collection: a dog contains name, age, ownerID (user ID).
- Appointment Collection: an appointment contains trainer, dog, date, location, purpose, dropoff time, pickup time, balance due.
- Schedule Collection is a collection of appointments.
- Calendar is a collection of schedules.
- Gallery Collection is a collection of images.
- Service Library Collection is a collection of services.
  - Service: contains name, description and price.

## 4.4 Coding Standards

To ensure consistency and organization throughout the project, we implement these coding standards:

- We will utilize camel case for this project's naming convention, including collections and attributes.
- We will only commit working code to the repo.
- We will commit to the repo early and often, committing work as soon as the changes are made and working.
- We will push small amounts of working code. This standard will keep the versioning of the repo organized and easily debuggable.
- For testing, we will only push with at least 60% coverage. We will aim to finish with at least 80% coverage.
- We will utilize trunk-based coding, pulling and pushing from the main branch. We will not utilize individual branches.

## 4.5 UI

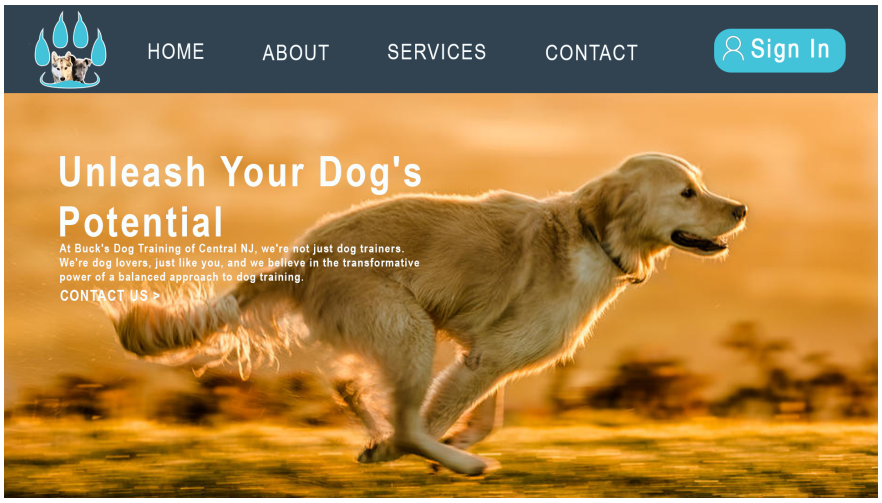



Figure 1: Homepage of the website, first page a user sees

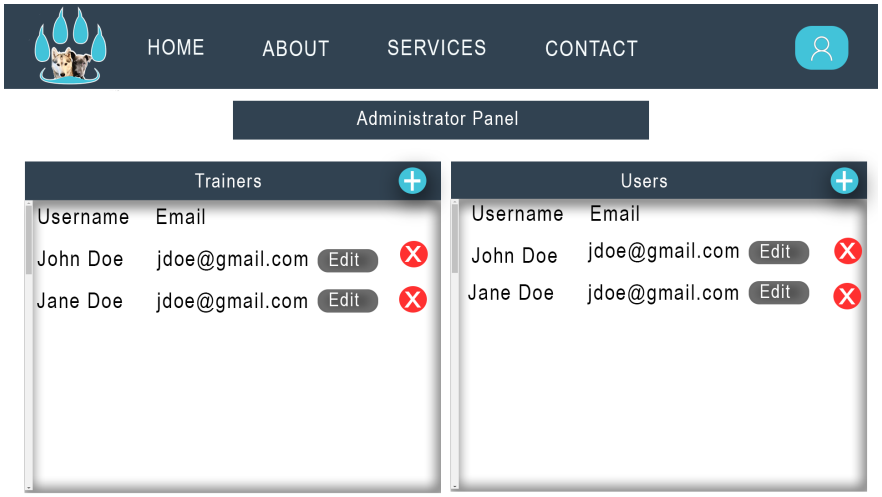



Figure 2: Admin panel to manage users and trainers

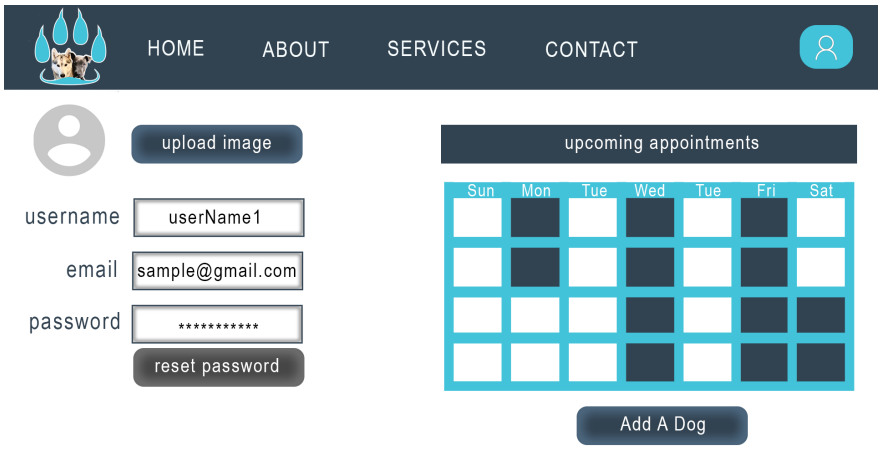



Figure 3: User profile to see personal account information, appointments, and dogs

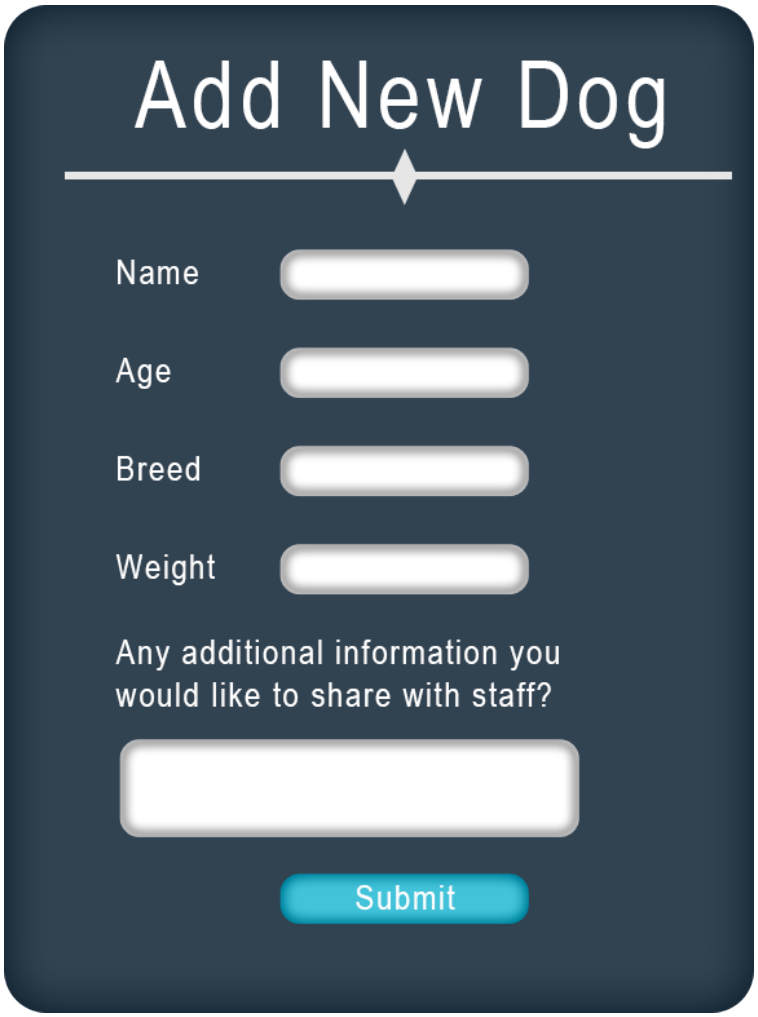



Figure 4: UI for a customer to add a dog to their profile

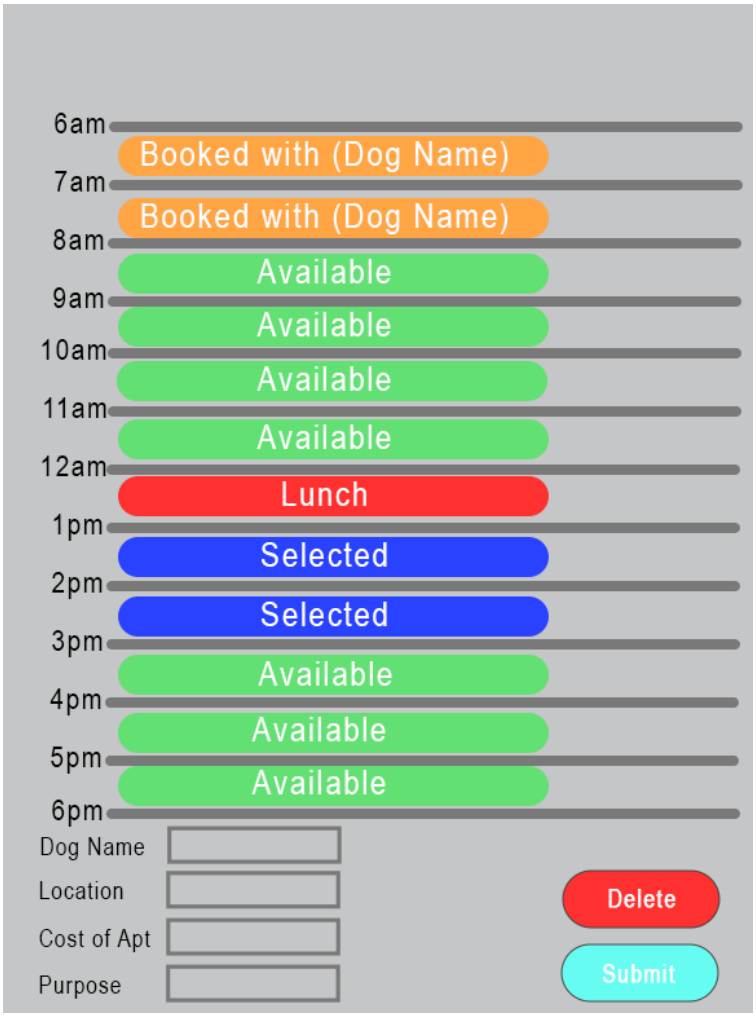



Figure 5: UI for an individual trainer's schedule

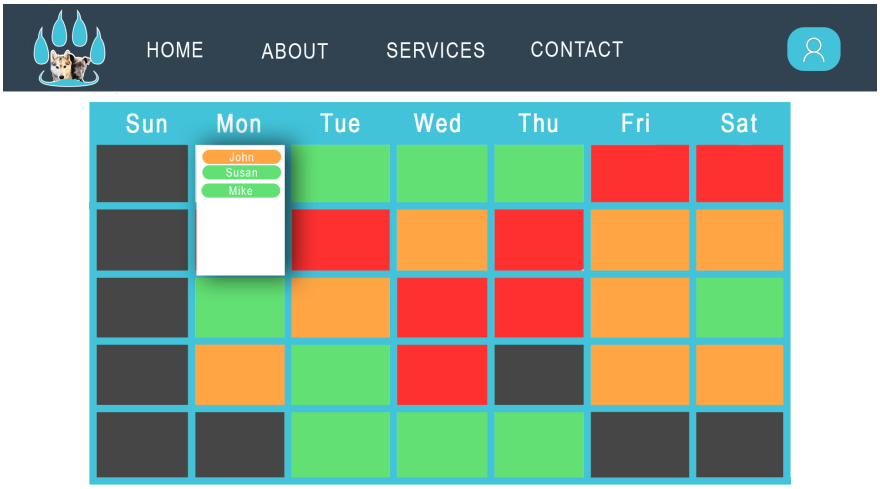



Figure 6: UI for the general schedule and calendar