Love At First Paw

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Github Repository

1 Chosen APIs

The two APIs that have been chosen by our group and approved by our TA for use in this project are:

1. **Petfinder API:**

   - Description: Provides access to a large database of adoptable pets and shelters.
   - Usage: Will be used for searching for pets and shelters by different characteristics, and will be used to get results from our quiz.

2. **Mapbox API:**

   - Description: A mapping API that provides location data and navigation features
   - Usage: Will be used to display pets/shelters on a map, and provide routing to pets/shelters.

2   Features to Implement

1. **Petfinder API:**

   (a) Pet Search Filtering Based on Characteristics
   - **Description:** Users can search for adoptable pets using filters such as breed, age, size, gender, and coat colour.
   - **Benefit:** Helps users quickly narrow down their choices when browsing for a pet.

   (b) Shelter Search Filtering by Name and Location
   - **Description:** Users can locate shelters by searching for a specific name or filtering by distance from their location.
   - **Benefit:** Allows users to find convenient shelter options, making the adoption process more accessible and efficient.

   (c) Animal Adoption Quiz
   - **Description:** A personalized quiz that asks users about their lifestyle, home environment, activity level, pet preferences, and more. Based on their answers, the system matches them with pets that align with their personality and living situation.
   - **Benefit:** Gives user a more natural way of searching for a pet that fits their lifestyle.

2. **Mapbox API:**

   (a) Interactive Map to Display Nearby Shelters
   - **Description:** A dynamic, zoomable, and draggable map that visually marks the locations of animal shelters. Users can interact with the map to explore shelter options based on location.
   - **Benefit:** Provides a user-friendly way to discover nearby shelters.

   (b) Static Map to Display Location of Selected Pet/Shelter
   - **Description:** When a user selects a specific pet or shelter, a static map is displayed to pinpoint it's exact location, if provided.
   - **Benefit:** Gives users a clear idea of the pet's or shelter's location.

   (c) Path to Pet or Shelter
   - **Description:** Generates turn-by-turn directions from the user's location to the selected pet/shelter, providing an easy-to-follow route. Users can input their starting location to receive the best path via car, walking, or cycling.
   - **Benefit:** Ensures users can easily find their way to the selected shelter without confusion or unnecessary delays.
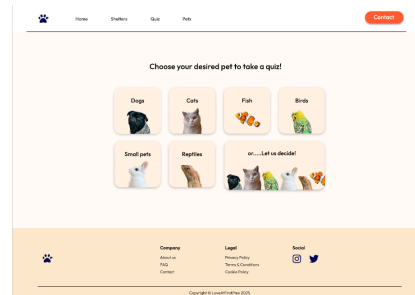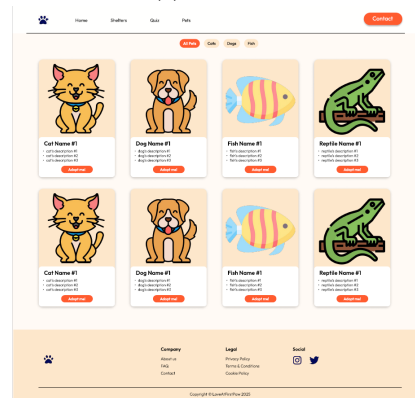
3 Mid-Fidelity Prototype
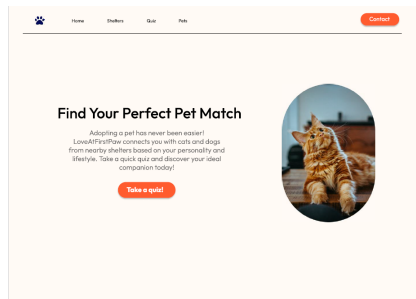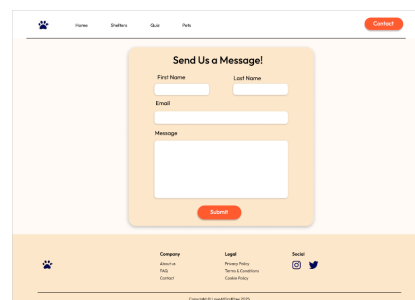

(a) Landing Page
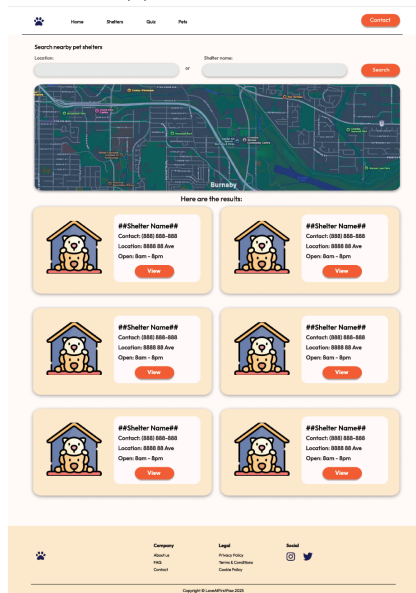
(b) Shelter Search

(c) Pet Quiz

(d) Pet Search

(e) Contact Page

Figma Interactive Link

4   SDLC Model

Chosen SDLC Model: Agile - Kanban
Reasoning:

- Allows for improved flexibility in our schedule, in case something goes wrong

- Visual task board style management system is extremely easy to learn and use. It will allow us to be more efficient and cooperate more effectively.

- Emphasizes fast deployment and easier testing, which will streamline our project's development

5 Work Breakdown Structure (WBS)

- **Project Setup**

  - Setup GitHub repository (Kanban board, branches, MIT license, README)
  - Install dependencies: Next.js, React, TailwindCSS, Mapbox, ShadCN
  - Configure API keys (Mapbox, Petfinder) in .env file
  - Setup GitHub Issues and milestones
  - Configure CI/CD pipeline (GitHub Actions, YAML workflow)
  - Setup project structure (components, lib, pages, types, assets, configs)
  - Deploy initial setup to GitHub

- **Home Page**

  - Create UI components (ShadCN buttons, search bar)
  - Implement navigation bar (home, shelters, quiz, pets, contact)
  - Design homepage (pet image, site description, quiz button)
  - Apply global theme and footer (About, FAQ, Legal, Social links)
  - Ensure proper linking between pages

- **Shelters Page**

  - Implement Petfinder and Mapbox API routers
  - Test API calls for efficiency
  - Add search bar with autofill
  - Display shelters on Mapbox map
  - List shelters (name, location, hours, view button)

- **Quiz Page**

  - Implement quiz to filter pet search
    * Select pet type (button with image and name)
    * 5 Questions about preferred pet (ShadCN form, previous/next buttons)
  - Select pet personality (ShadCN form)
  - Display pet results based on quiz filters

- **Pets Page**

  - Filter pets by type (highlight selected button)
  - Display pets in a scrollable 4-column grid

- Implement pet cards with Petfinder API data
- "Adopt Me" button to lead to shelters page

- **Contact Page**

  - Implement form (First Name, Last Name, Email, Message, Submit)

- **Testing and Deployment**

  - Conduct user testing and optimize design
  - Perform unit tests on components and API routing
  - Deploy final version to Vercel

6 Project Schedule

Project Set-Up	March 10th, 2025
Petfinder Feature 1 Completed	March 13th, 2025
Petfinder Feature 2 Completed	March 16th, 2025
Petfinder Feature 3 Completed	March 19th, 2025
Petfinder Features Tested and Fully Integrated	March 20th, 2025
Milestone 1.5 Due	March 21st, 2025
Mapbox Feature 1 Completed	March 25th, 2025
Mapbox Feature 2 Completed	March 29th, 2025
Mapbox Feature 3 Completed	April 2th, 2025
Mapbox Features Tested and Fully Integrated	April 6th, 2025
Milestone 2 Due → End of Project	April 8th, 2025

7 Risk Assessment and Mitigation Plan

Low-Risk Issues

1. **UI/UX Inconsistencies**

   - **Risk**: Small inconsistencies in the design may make the app look unprofessional.
   - **Mitigation**: Each completed feature will be followed by a design review, to make sure the UI/UX remains consistent.

2. **Poor Documentation**

   - **Risk**: Incomplete or low-quality documentation could lead to confusion or hinder future development efforts.
   - **Mitigation**: Each team member will update the project documentation as they go, ensuring all features, code, and APIs are well-documented for both developers and users.

3. **Typos or Errors in Text Content**

   - **Risk**: There may be occasional typos or mistakes in the text content that may impact the users impression of our website.
   - **Mitigation**: We will proofread all content and implement a review process to catch spelling mistakes before publishing content on the website.

4. **Browser Compatibility Issues**

   - **Risk**: The website may not display correctly on all browsers due to differences in rendering engines, leading to minor layout or functionality issues.
   - **Mitigation**: We will regularly test the site on multiple browsers (e.g., Chrome, Firefox, Safari, Edge) and use standardized web technologies to minimize compatibility issues.

5. **Slow Loading Times for Certain Features**

   - **Risk**: Some components, such as the interactive map or pet search, may take longer to load, potentially impacting the user experience.
   - **Mitigation**: We will optimize our projects images and/or scripts, minimize API calls, and implement lazy loading techniques to improve performance.

Medium-Risk Issues

1. **API Integration Challenges**

   - **Risk**: Integrating multiple APIs (Mapbox and Petfinder) could pose some challenges, such as technical limitations or issues in retrieving data.

   - **Mitigation**: Focus on API integration early in the project to give plenty of time to resolve and work around any issues if they arise. We will also review the API documentation so that we know what can and can't be done.

2. **User Testing Lacking Diversity**

   - **Risk**: The user testing may lack diversity in demographics, leading to a product that may not fully meet the needs of all user groups.

   - **Mitigation**: Ensure that user testing includes a diverse group of testers, considering factors such as age and tech proficiency. We will start user testing within our own group, before branching out to other people to increase diversity.

3. **Data Formatting and Inconsistencies**

   - **Risk**: Data from the APIs may not be in the expected format, leading to potential display or functionality issues.

   - **Mitigation**: We will write code that validates and formats the API data before rendering them on the site, and conduct regular testing to catch any inconsistencies that may arise.

4. **User Input Errors**

   - **Risk**: Users may input invalid or incomplete data (e.g., incorrect address format), which could lead to issues with the interactive map or other areas with user inputs on our website.

   - **Mitigation**: Implement input validation wherever possible and provide helpful error messages to guide users in case of a mistake.

5. **Incorrect/Outdated Data from APIs**

   - **Risk**: The pets in Petfinder's database, or Mapbox's location services may return inaccurate, incorrect, or outdated information, leading users to find already adopted pets, or to the wrong destination.

   - **Mitigation**: We will validate the returned location/pet data before displaying it, and provide users with the ability to report outdated and/or incorrect location/pet data.

High-Risk Issues

1. **API Rate Limiting or Downtime**

   - **Risk**: Exceeding the free-tier API usage limits of Mapbox or Petfinder could result in losing some features or incurring unwanted costs.
   - **Mitigation**: We will closely monitor API usage, set up alerts for usage thresholds, and implement caching to minimize our API calls.

2. **Data Security Concerns**

   - **Risk**: Users may enter sensitive information (e.g., home address) which could be vulnerable to security issues if not properly handled.
   - **Mitigation**: We will follow best practices for securing user data, and make sure the user is aware of what is happening to their data. We will ensure that nothing except for what is essential to our app is collected.

3. **Overloaded Server During High Traffic**

   - **Risk**: If the website experiences a surge in traffic (e.g., during the project demo), the server could become overloaded, causing the site to crash or slow down significantly.
   - **Mitigation**: We will set up caching and monitor server performance to ensure the site can handle increased traffic. We will try to optimize everything we can to ensure the site does not get overloaded.

4. **Major Bugs Near Deadline**

   - **Risk**: A critical bug occurring close to the project deadline could significantly impact our ability to deliver a good product.
   - **Mitigation**: We will follow best practices in version control, maintain regular backups, and conduct continuous testing to catch and resolve major issues before they become unmanageable.

5. **Unintended Ethical or Legal Issues**

   - **Risk**: The website may inadvertently violate ethical or legal guidelines, such as failing to comply with data privacy laws or misrepresenting pet adoption policies.
   - **Mitigation**: We will research and adhere to the relevant legal requirements and adoption policies. We will also provide user's with any needed disclaimers, such as pet availability.

8 Data Flow Diagrams (DFDs)
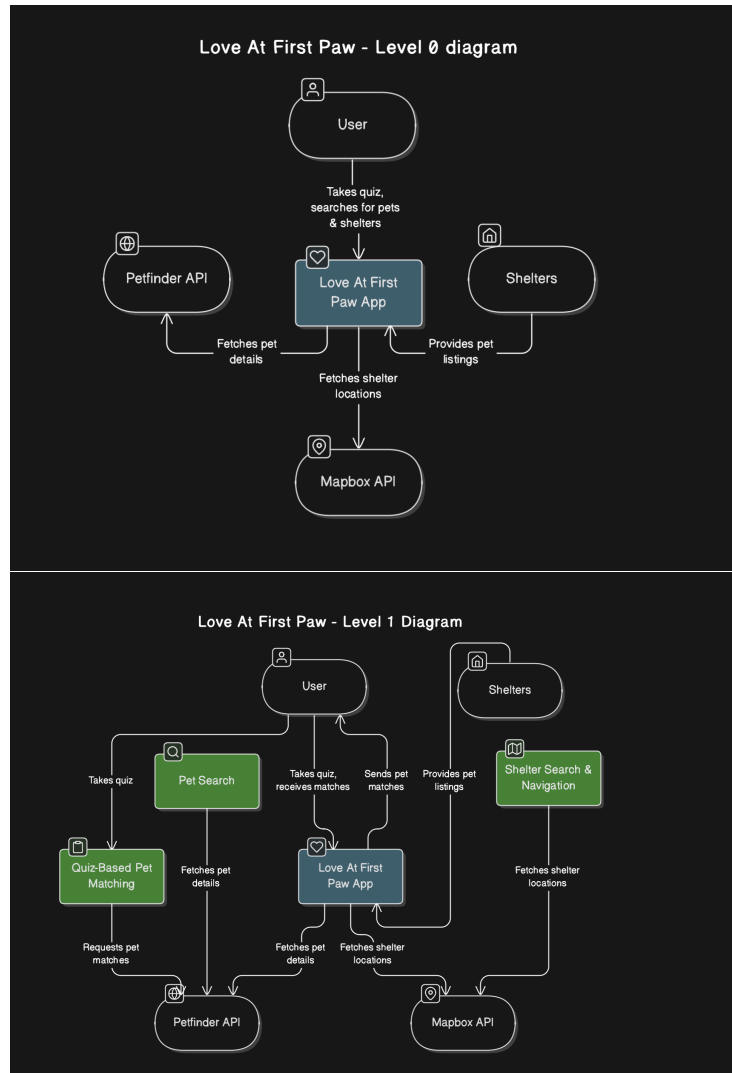
9   MVC Model
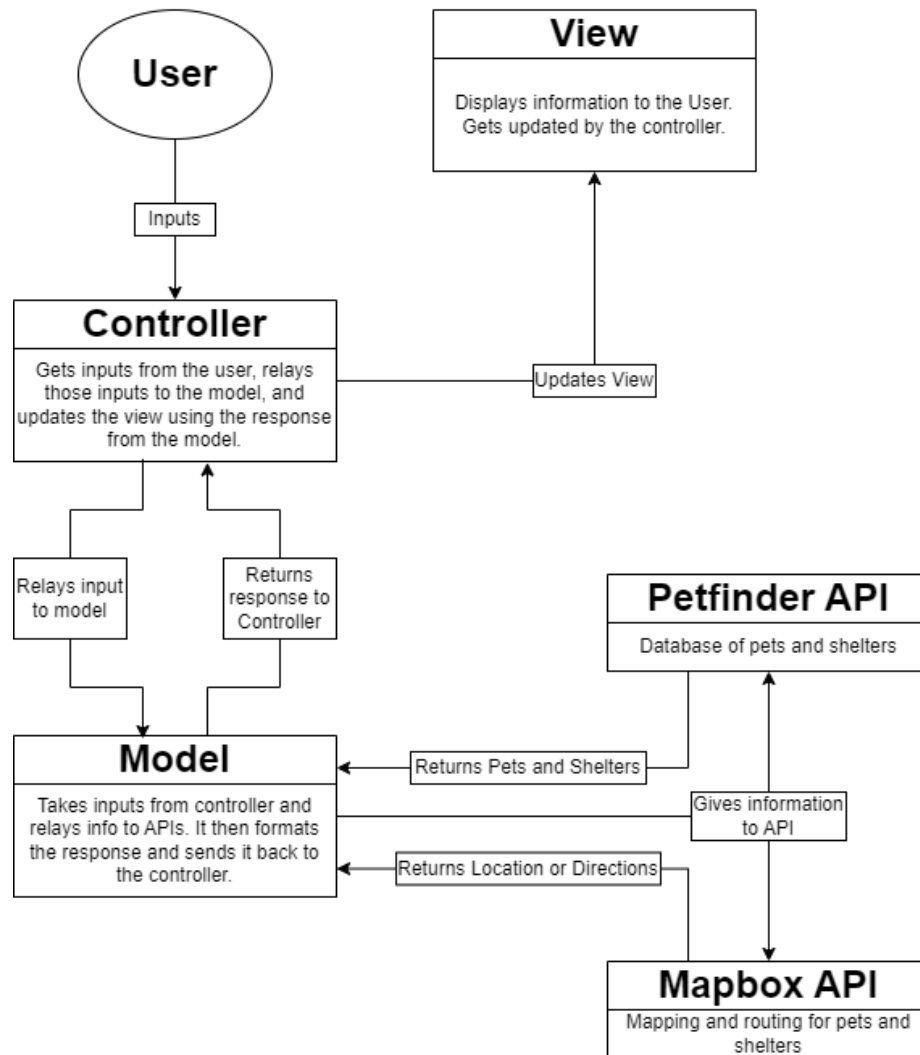
10   Appendix

Work Allocation

- All: Worked on project schedule.

- Ashton Morrison: Created Report. Wrote descriptions and usages of APIs. Wrote features and benefits of APIs. Chose and wrote SDLC Model. Wrote Risk Assessment and Mitigation plan. Created MVC Diagram. Wrote Appendix. Presented flow of data in video. Edited and subtitled video.

- Sajan Senghera: Created WBS. Presented APIs in video.

- Pan Eain: Created DFDs. Worked on Mid-fidelity prototype. Presented Overview of Project in video.

- Oak Soe: Worked on Mid-fidelity prototype. Presented Mid-fidelity prototype in video.

Changelog

- Changed the the second API from OpenStreetMap to Mapbox due to the limited features of OpenStreetMap. Features remain the same.

- Changed planned hosting site from Github Pages to Vercel to allow for a Dynamic Website.