Title: GoPal

Team Members:

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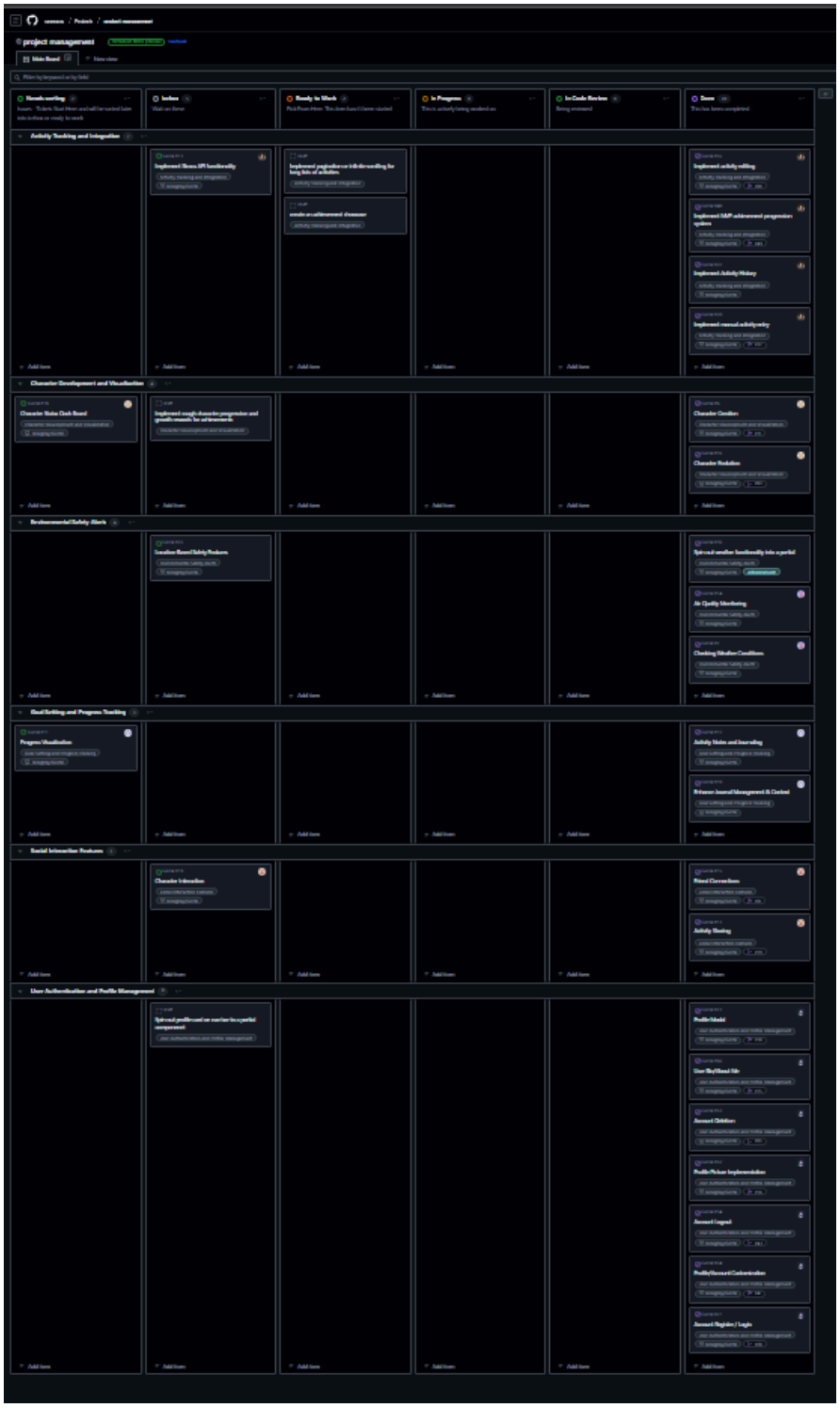
Project Description: GoPal is a fitness companion web application that gamifies workouts by linking users' activity data to a virtual character that evolves with their exercise progress. The app tracks various physical activities like running, cycling, and swimming, allowing users to log their workouts, set personal goals, and maintain streaks of active days. Beyond basic tracking, GoPal incorporates social elements where users can connect with friends, share achievements, and view each other's activities to foster a supportive fitness community. A standout feature is the customizable virtual companion (Pal) that levels up as users maintain consistency in their fitness journey. Users can personalize their Pal with different colors, hats, and names, creating a unique digital fitness partner that grows alongside them. The application also provides safety features such as real-time weather and air quality alerts to inform users about outdoor exercise conditions. Additional features include a journal system for recording thoughts alongside workouts, an achievement system that rewards fitness milestones, and comprehensive profile customization options. GoPal transforms fitness tracking into an engaging, rewarding experience that motivates users to maintain an active lifestyle while connecting with their community.

Project Tracker: https://github.com/ranegray/GoPal/projects



Video: https://www.youtube.com/watch?v=6ONGeXdi2a8

VCS: https://github.com/ranegray/GoPal

Contributions:
Rane Gray (GitHub: ranegray)

As the lead architect, Rane established the foundational structure for the GoPal fitness tracking application. He implemented the comprehensive activity tracking system that allows users to log and monitor various workouts with detailed metrics. Rane also created the achievement and notification systems that gamify the fitness experience, providing users with motivational milestones and real-time updates. His work formed the backbone of the application, connecting the various features into a cohesive user experience while ensuring the underlying database architecture supported all functionality.

Benjamin Mast (GitHub: Ben-Mast)

Ben M. developed the robust authentication system that secures the application, implementing secure registration and login processes with password hashing. He created the account and profile management features that allow users to customize their personal information, privacy settings, and display preferences. His implementation of profile viewing functionality enables users to view friend profiles with proper privacy controls. His contributions focused on security and user data management, ensuring personal information is handled safely while creating an intuitive user experience.

Ana Manica (GitHub: anamanica)

Ana designed and implemented the virtual character system that gives each user a customizable fitness companion. She developed the database schema for storing character attributes and created the frontend interfaces for customization. Ana also contributed the character evolution system, which ties fitness progress to character development through an XP mechanism. This gamification element rewards users for consistent activity and provides visual reinforcement of progress, making the fitness tracking experience more engaging and personally meaningful. In addition, she worked with CSS to create some simple animations to make the character more dynamic and personable.

Samuel Ramirez (GitHub: samuelARamirez)

Samuel built the social features of the application, focusing on the friend request system that allows users to connect with each other. He implemented the request sending, accepting, and declining functionality with appropriate notifications. Samuel also created the social feed that shares recent activities and achievements between friends, enhancing the community aspect of fitness tracking. His work enabled users to view and interact with friends' progress, adding a motivational social dimension to the application that encourages friendly competition and support.

Ben Atkinson (GitHub: beat2319)

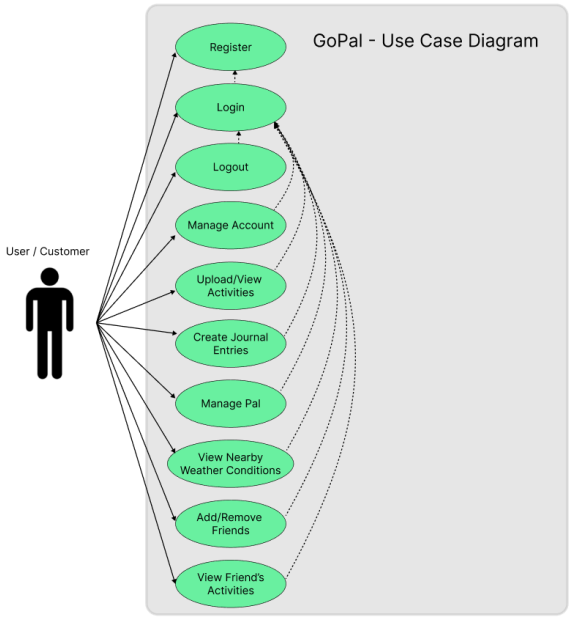
Ben A. developed the journaling system that allows users to document their fitness journey beyond just activity metrics. He implemented the journal entry creation, display, and management features, including searching and filtering functionality. Ben's system enables users to track subjective aspects of fitness like motivation and emotional state alongside objective data. He also conducted extensive research on

deployment options and testing procedures, contributing significantly to the application's reliability and accessibility across different environments.

Aisli Steele (GitHub: aist6825)

Aisli integrated external APIs to enhance the application with environmental context for fitness activities. She implemented geolocation features to prompt for user location and connected the OpenWeatherMap API to provide current weather conditions. Aisli also created the weather alert system with customizable settings for air quality, wind speed, and temperature thresholds, helping users make informed decisions about outdoor activities. Her contributions added practical utility to the application by connecting fitness tracking with relevant environmental factors.

Use Case Diagram:



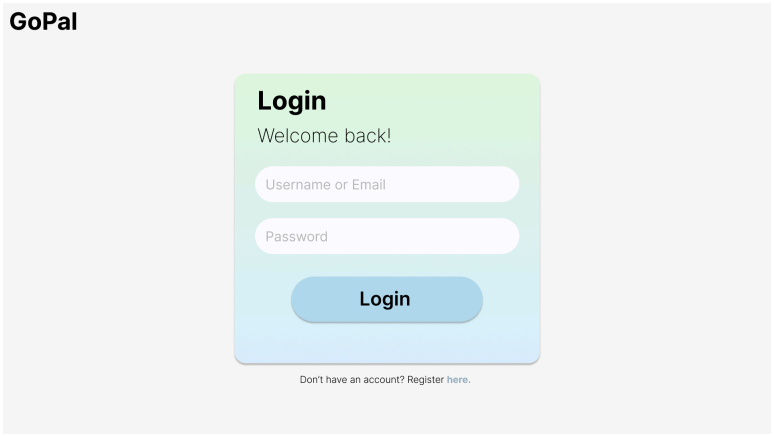
Use Cases Description

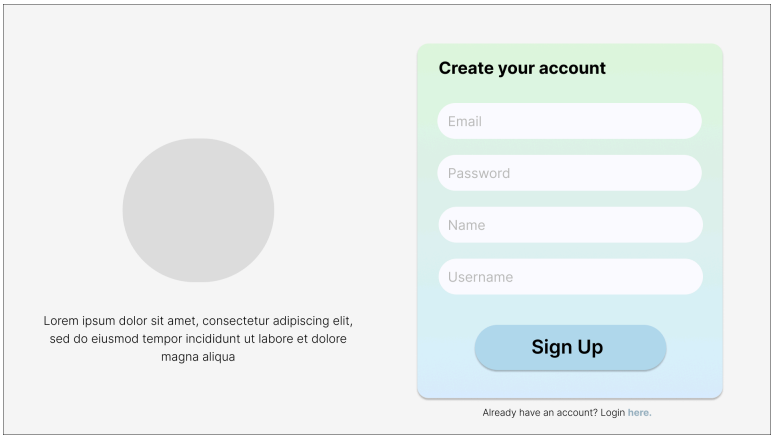
- Register: User can create a new account by providing username, email, and a secure password that meets system requirements.
- Login: User can authenticate to access the system using their registered username and password credentials.
- Logout: User can securely end their current session and return to the login screen.
- Manage Account: User can modify personal information including display name, email, birthday, country, username, and password; they can also delete their account.
- Upload/View Activities: User can log new fitness activities (running, cycling, swimming, etc.) with details like duration, distance, and notes; they can view their activity history and delete previous entries.
- Create Journal Entries: User can write and save personal reflections about their

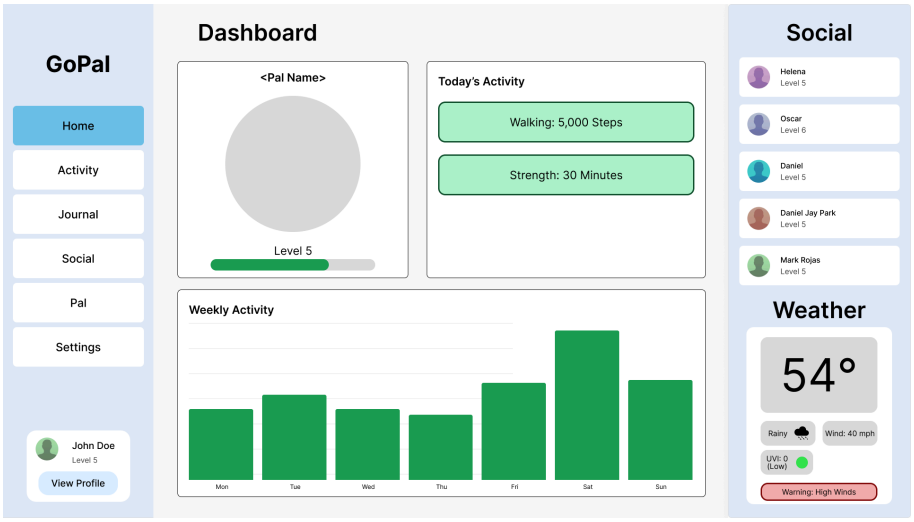
fitness journey with titles and timestamps.

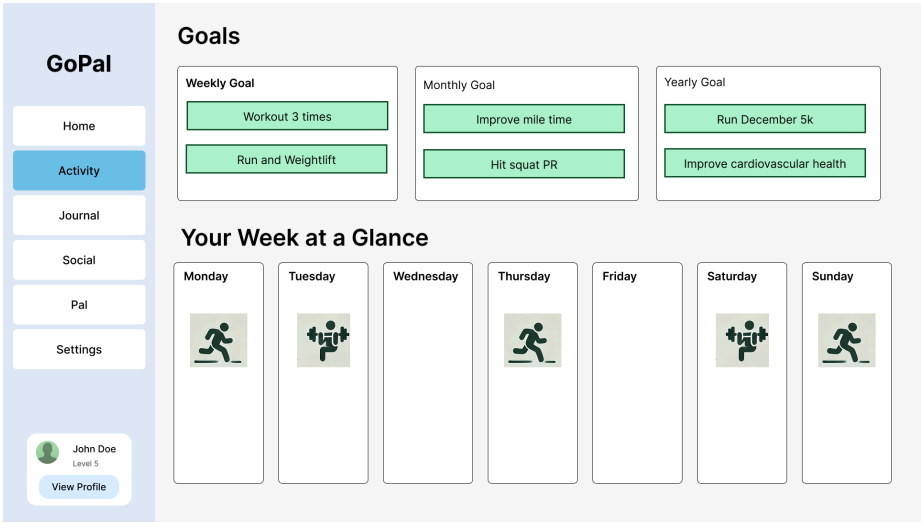
- Manage Pal: User can customize their virtual fitness companion by changing its name, color, and accessories (hats); they can view how their Pal grows based on their activity level.
- View Nearby Weather Conditions: User can access current weather and air quality data based on their location to plan outdoor activities safely.
- Add/Remove Friends: User can send friend requests to other users, accept or decline incoming requests, and remove existing connections.
- View Friends' Activities: User can see recent workouts and achievements from their connected friends in a social feed.

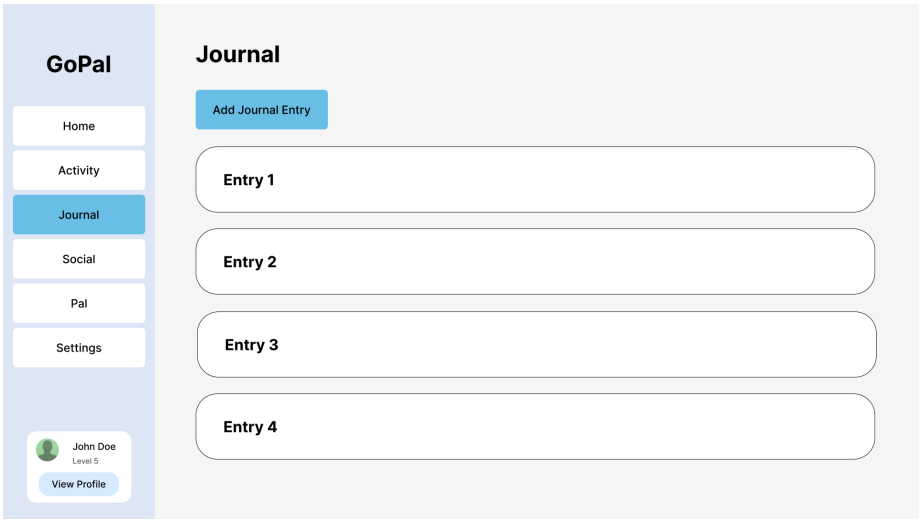
Wireframes:

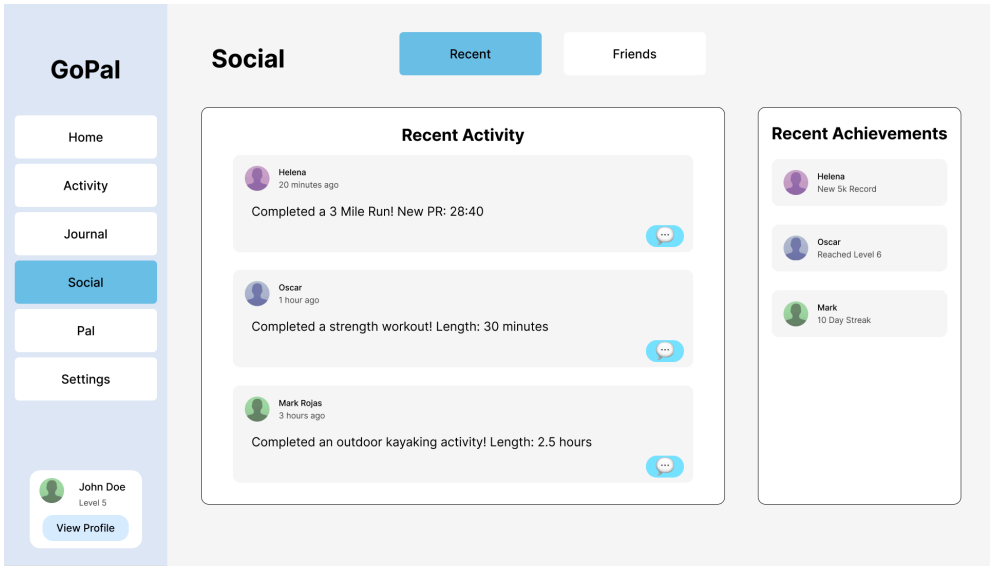


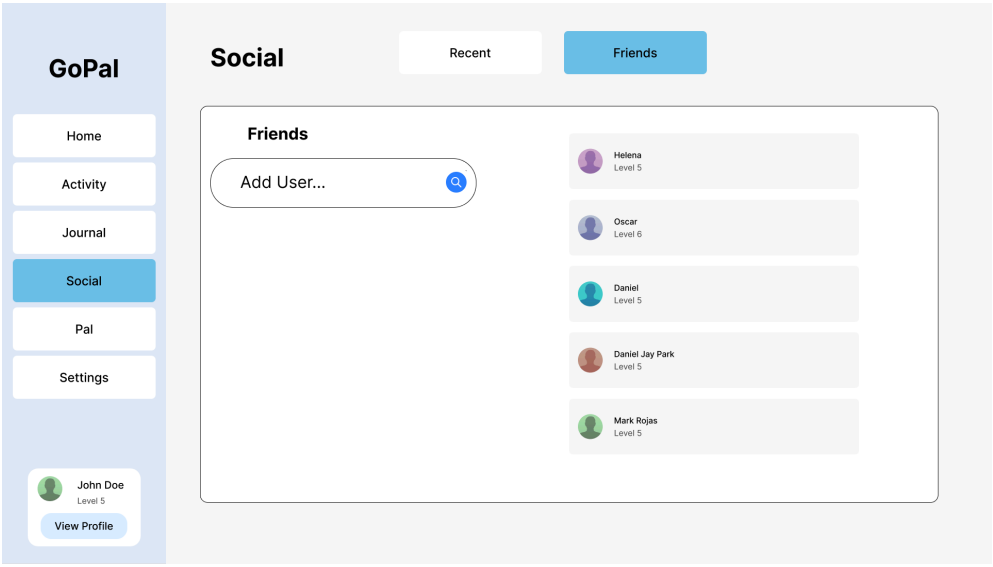


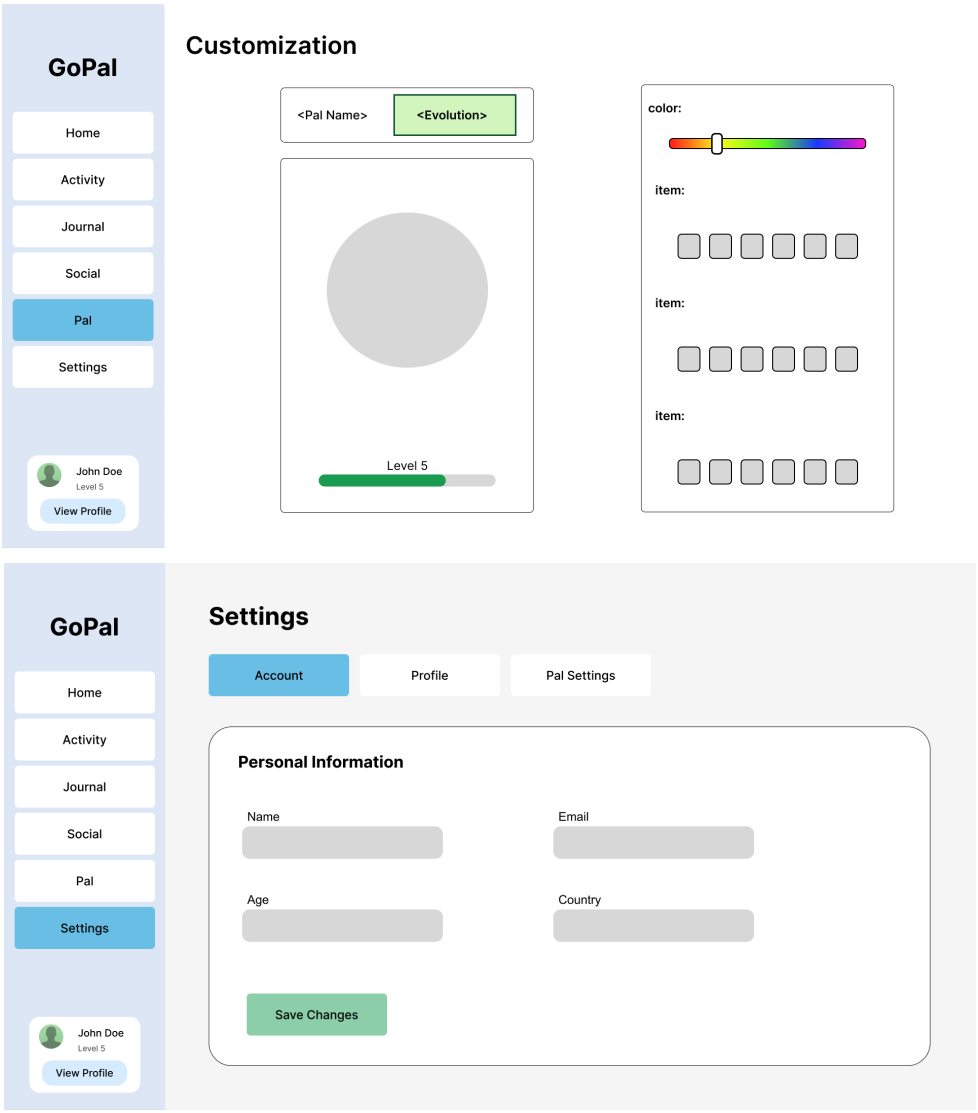

GoPal
Home
Activity
Journal
Social
Pal
Settings
John Doe
Level 5
View Profile
Dashboard
<Pal Name>
Level 5
Today's Activity
Walking: 5,000 Steps
Strength: 30 Minutes
Weekly Activity
Mon
Tue
Wed
Thu
Fri
Sat
Sun
Social
Helena
Level 5
Oscar
Level 6
Daniel
Level 5
Daniel Jay Park
Level 5
Mark Rojas
Level 5
Weather
54°
Rainy
Wind: 40 mph
UVI: 0 (Low)
Warning: High Winds


GoPal
Home
Activity
Journal
Social
Pal
Settings
John Doe
Level 5
View Profile
Goals
Weekly Goal
Workout 3 times
Run and Weightlift
Monthly Goal
Improve mile time
Hit squat PR
Yearly Goal
Run December 5k
Improve cardiovascular health
Your Week at a Glance
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday


GoPal
Home
Activity
Journal
Social
Pal
Settings
John Doe
Level 5
View Profile
Journal
Add Journal Entry
Entry 1
Entry 2
Entry 3
Entry 4


GoPal
Home
Activity
Journal
Social
Pal
Settings
John Doe
Level 5
View Profile
Social
Recent
Friends
Recent Activity
Helena
20 minutes ago
Completed a 3 Mile Run! New PR: 28:40
Oscar
1 hour ago
Completed a strength workout! Length: 30 minutes
Mark Rojas
3 hours ago
Completed an outdoor kayaking activity! Length: 2.5 hours
Recent Achievements
Helena
New 5k Record
Oscar
Reached Level 6
Mark
10 Day Streak


GoPal
Home
Activity
Journal
Social
Pal
Settings
John Doe
Level 5
View Profile
Social
Recent
Friends
Friends
Add User...
Helena
Level 5
Oscar
Level 6
Daniel
Level 5
Daniel Jay Park
Level 5
Mark Rojas
Level 5



Test Results:

<u>Automated Unit Testing:</u>

Test Implementation

- Framework: Mocha and Chai with chai-http
- Test file location: /test/server.spec.js
- Test coverage: Authentication, basic server functionality

Test Suites

- Server Functionality: Basic endpoint testing
- Registration API: User registration with validation
- Login API: User authentication testing

<u>User Acceptance Testing Results:</u>

Test Case 1.1: User Registration

Use Case Description: A new user attempts to register for an account using valid credentials.

Observations:

- **What are the users doing?** Most users navigated to the registration page easily and entered their email, username, and password as prompted. One user initially tried to use the login form before realizing they needed to register.
- **What is the user's reasoning for their actions?** Users understood the standard registration flow. The user who initially tried to log in assumed they might already have an account or that registration was part of the login screen.
- **Is their behavior consistent with the use case?** Yes, apart from the one user's initial confusion, the behavior matched the expected steps.
- **If there is a deviation from the expected actions, what is the reason for that?** The deviation stemmed from the user's assumption about the login/registration process, possibly due to experiences with other applications.
- **Did you use that to make changes to your application? If so, what changes did you make?** Yes. We added a clear "Already have an account? Login here" link on the registration page and "Don't have an account? Register here" on the login page to guide users to the appropriate form.

Test Case 2.1: Activity Addition

Use Case Description: A logged-in user adds a new fitness activity (e.g., Running).
Observations:

- **What are the users doing?** Users successfully logged in and found the "Add Activity" button. Most filled in the required fields correctly. However, several users hesitated when entering the duration, initially trying to enter total minutes directly.
- **What is the user's reasoning for their actions?** Users understood the goal was to record their workout. The hesitation with duration input stemmed from ambiguity in the expected format.
- **Is their behavior consistent with the use case?** Mostly. The input format confusion was the main deviation.
- **If there is a deviation from the expected actions, what is the reason for that?** Users weren't sure how to input duration in the hours/minutes format we initially provided.
- **Did you use that to make changes to your application? If so, what changes did you make?** Yes. We implemented a more intuitive duration input with separate fields for hours and minutes, along with clear labels. We also added a hidden field that automatically converts the total to minutes when submitting the form, making the input process more user-friendly while maintaining data consistency.

Test Case 2.3: Activity Statistics

Use Case Description: A user reviews their calculated activity statistics after adding multiple activities.
Observations:

- **What are the users doing?** Users added several activities and navigated to view their statistics on the dashboard. They checked the total distance, duration, and number of activities. One user questioned how the "streak" was calculated.
- **What is the user's reasoning for their actions?** Users wanted to verify that their logged activities were correctly summarized. The user questioning the streak wanted to understand the logic behind it.
- **Is their behavior consistent with the use case?** Yes, users were actively reviewing the intended data.
- **If there is a deviation from the expected actions, what is the reason for that?** The lack of clarity regarding the "streak" calculation led to the user's question, which wasn't a deviation in action but a request for clarification.

- **Did you use that to make changes to your application? If so, what changes did you make?** Yes. We implemented streak calculation functionality in the stat-utils.js file that recognizes consecutive days with activities. The streak is now prominently displayed on the dashboard in a dedicated statistics card with purple highlighting to draw attention to it.

Test Case 3.1: Weather Display

Use Case Description: A logged-in user checks the home page to see the current weather information.
Observations:

- **What are the users doing?** Upon logging in, users looked for the weather information on the home page. Some users with privacy concerns were hesitant to grant location access when prompted.
- **What is the user's reasoning for their actions?** Users expected weather relevant to their current location to help plan activities. Hesitation on location sharing was due to general privacy awareness.
- **Is their behavior consistent with the use case?** Yes, users were looking for and observing the weather widget. The hesitation was a privacy concern deviation.
- **If there is a deviation from the expected actions, what is the reason for that?** Privacy concerns about sharing location data.
- **Did you use that to make changes to your application? If so, what changes did you make?** We implemented both the weather API integration and proper error handling. Our geolocation.js file now checks if weather data is already present before prompting for location again, reducing unnecessary permission requests. Additionally, we display a clear "Awaiting weather data..." message while loading, to ensure that if the user decides not to allow location data, the weather widget doesn't break any other functionalities.

Test Case 4.1: Character Customization

Use Case Description: A user customizes their fitness companion character (Pal).
Observations:

- **What are the users doing?** Users navigated to the Pal section and explored the customization options. They experimented with different hats and colors for their characters. Several users clicked on the character to see if there was any interaction.
- **What is the user's reasoning for their actions?** Users enjoyed the gamification aspect and wanted to personalize their experience. The clicking behavior suggested they expected some form of interaction with the character.
- **Is their behavior consistent with the use case?** Yes, users engaged with the customization features as intended. The expectation of interaction was not initially part of the use case.
- **If there is a deviation from the expected actions, what is the reason for that?** Users expected the character to react when clicked, based on experiences with similar gamified applications.
- **Did you use that to make changes to your application? If so, what changes did you make?** Yes. We implemented character animations to make the experience more engaging. The character now has floating, wiggling, shimmying, and heartbeat animations that cycle automatically. Additionally, we added a spin animation that triggers when users click on the character, directly responding to the observed user behavior and expectations.

Deployment:
1) **https://gopal.beatcloud.net/** (up to date with final submission) **2)**https://gopal-2707.onrender.com/ (very old version of website, also not reliably up because render is weird)