Additional Feature Development Concept

Feature Name: Social Competition and Leaderboard

Description:
With this feature, users will be able to compete against friends and other users by comparing their fitness progress and/or minutes earned through gaming. This app will include a leaderboard showing rankings based on certain metrics, such as the number of steps taken, exercises completed, and gaming minutes earned. Users can challenge others with goals, for instance, "Most Steps This Week," and publish their accomplishments.

Steps to Develop the Model:

1. **Define Metrics and Goals:**
- Identify the main metrics of ranking-preferably steps, exercises, and gaming minutes.
- Add filtering on leaderboards, such as filtering by friends, region, or global scale.

2. **Design Data Flow:**
- Collect user data: steps, exercise types, and time earned.
- Aggregate these metrics into one normalized score for leaderboard ranking.

3. **Model Development:**
- Implement algorithms that can process and rank user data.
- Use a weighted formula for scores, such as Score = Steps × 0.5 + Exercise Points × 1.5 + Gaming Minutes Earned × 2.

4. **Testing and Calibration:**
- Simulate user data to test the accuracy and fairness of the ranking formula.
- Gather feedback from beta testers to adjust weights and usability.

5. **UI/UX Design:**
- Create mockups for leaderboard displays and competition dashboards.
- Ensure intuitive navigation and visually appealing designs.

Data Collection:

Data to Collect:

- Number of steps taken (from device sensors or fitness trackers).
- Type of exercise activity and duration (manually or via integration with wearables).

- Minutes of gaming earned and consumed.
- User Demographic Data: Optional for analytics.

How to Collect:

1. **Sensor Integration:**
    - Use APIs such as Google Fit, Apple Health, or the SDKs of wearable devices.
2. **User Input:**
    - Provide the user with the ability to log exercises and achievements manually.
3. **In-app Tracking:**
    - Monitor gaming session timers to calculate minutes consumed.

Result Presentation

- **Leaderboard Views:**
    - Global, Friends, Regional, Weekly/Monthly.
    - Show rank, username, and a breakdown of the score components.
- Visual Achievements:
    - Award badges for milestones, e.g., "10,000 Steps in a Day".
- Progress Analytics:
    - Charts and graphs showing trends in activity and earned gaming minutes.

Coding Conventions:

- **Modularity:**
    - Separate components for data processing, UI rendering, and API integration.
- **Scalability:**
    - Use a serverless architecture to handle fluctuating user loads.
- **Security:**
    - Encrypt sensitive data and follow the guidelines of GDPR/CCPA.
- **Readability:**
    - PEP 8 for Python and other general industry standards.

Rationale: Because these conventions guarantee maintainability, performance, and fluid user experience.

App Architecture

Points of Code Execution:

1. **Initialization:**
    - The code loads upon the opening of the app, loading user profiles, fitness data, and in-game settings.
2. **Feature Execution:**
    - Leaderboard model execution:
        - When the user logs new fitness data.
        - At scheduled intervals such as daily refresh of leaderboards.
        - When users participate in challenges or check the ranking.
3. **Termination:**
    - Leaderboard feature rests after submitting the data or when the user navigates away from the Leaderboard screen.

Starting and Stopping Points:

Starting Points:

- Triggered by user actions (e.g., opening the leaderboard, logging data).
- Scheduled refresh intervals (e.g., midnight daily for leaderboards).

Stopping Points:

- When data processing completes and results are displayed.
- On app exit or switching to other features.

Rationale: These points minimize resource usage and ensure data is updated only when relevant to the user, optimizing both performance and user experience.

Visual Example:

Figure Description: A mockup display of a leaderboard, showing rankings, user scores, and badges. It consists of a tab for filtering, such as "Friends," "Global," and "Regional," and also a "Set Challenge" button.

By implementing the feature of Social Competition and Leaderboard, the application will create community involvement in which users are engaged in activity for an extended period while improving their experience.